BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA

DOCKET NO. 2019-184-E

South Carolina Energy Freedom Act (H.3659) Proceeding to Establish Dominion Energy South Carolina, Inc.'s Standard Offer Avoided Cost Methodologies, Form Contract Power Purchase Agreements, Commitment to Sell Forms, and Any Other Terms or Conditions Necessary (Includes Small Power Producers as Defined in 16 United States Code 796, as Amended) – S.C. Code Ann. Section 58-41-20(A)	)))))))))))))	**JOINT PROPOSED ORDER OF SOUTH CAROLINA SOLAR BUSINESS ALLIANCE AND JOHNSON DEVELOPMENT ASSOCIATES**

TABLE OF CONTENTS

COME NOW Intervenors the South Carolina Solar Business Alliance ("SCSBA") and Johnson Development Associates ("JDA," and together with SCSBA, "Intervenors"), pursuant to the Hearing Examiner Directive issued in this docket on September 19, 2019 (Order No. 2019-107-H), and file this Proposed Order.

I. INTRODUCTION

This matter comes before the Public Service Commission of South Carolina ("Commission") on the initial review of the Dominion Energy South Carolina ("DESC" or "the Company") proposed standard offer, avoided cost methodologies, form contract power purchase agreements, commitment to sell forms, and other terms and conditions. The procedure followed by the Commission in this proceeding is set forth in S.C. Code Ann. § 58-41-20 (2019). In these dockets DESC seeks approval of:

1. The Company's application of the Differential Revenue Requirement ("DRR") methodology to calculate DESC's avoided energy and capacity rates, including an estimate of the costs of integrating solar resources to be considered in the avoided energy rate;
2. Updates to the proposed PR-1 rate schedule for Small Power Producers and Cogenerators that are Qualifying Facilities ("QFs") that have power production capacity less than or equal to 100 kW;
3. Proposed updates to DESC's "Rider to Retail Rates – Net Energy Metering for Renewable Energy Facilities ("NEM Rider")";
4. The Company's rate schedule setting forth DESC's proposed methodology for determining avoided costs for Power Purchase Agreements ("PPAs") with Small

Power Producers under the Public Utility Regulatory Policies Act of 1978 ("PURPA") and South Carolina Act No. 62 of 2019 ("Act No. 62");

5. The Company's rate schedule setting forth DESC's proposed Standard Offer for small power producers with a facility rating up to 2 megawatts ("MW") AC;
6. DESC's proposed Standard Offer PPA for QFs with a facility rating 2 MW or less as required by Section 58-41-20(A) of Act No. 62;
7. DESC's proposed Form PPA for QFs with a facility rating above 2 MW as required by Section 58-41-20(A) of Act No. 62;
8. The Company's proposal to withdraw and terminate its rate schedule entitled "Rate PR-2 Small Power Production, Cogeneration" ("Rate PR-2").
9. DESC's imposition of a Variable Integration Charge ("VIC") on certain solar QF projects already party to PPAs with DESC.

A. <u>Notice and Intervention</u>

By letters dated July 18, 2019, the Clerk's Office of the Commission instructed the Company to publish a Notice of Hearing and Prefile Testimony Deadlines ("Notice") in newspapers of general circulation by July 29, 2019. The letters also instructed the Company to provide Proof of Publication on or before August 12, 2019. The Notice indicated the nature of the proceeding and advised all parties desiring participation in the scheduled proceeding of the manner and time in which to file appropriate pleadings. On August 5, 2019, the Company filed an affidavit demonstrating that the Notice was duly published in accordance with the instructions set forth in the July 18, 2019 letter.

Petitions to Intervene were received from the South Carolina Energy Users Committee ("SCEUC"), the South Carolina Coastal Conservation League ("CCL") and the Southern Alliance for Clean Energy ("SACE"), the SCSBA, JDA, the South Carolina Department of Consumer Affairs ("SCDCA"), Ecoplexus, Inc. ("Ecoplexus"), and Walmart, Inc. ("Walmart"). The Petitions to Intervene of SCEUC, CCL, SACE, SCSBA, JDA, Ecoplexus, Walmart, and SCDCA were not opposed by DESC and no other parties sought to intervene in this proceeding. The South Carolina Office of Regulatory Staff ("ORS") is automatically a party pursuant to S.C. Code Ann. § 58-4-10(B) (2015).

II. PRELIMINARY MATTERS

A. DESC's Motion to Strike Final Report of Power Advisory, LLC

As a preliminary matter, the Commission must consider the Motion to Strike Final Report of Power Advisory, LLC ("Motion to Strike") filed by DESC on November 8, 2019. The Commission denies the Motion to Strike, for several reasons. First, it was not timely filed pursuant to S.C. Code Reg. 103-829. The Motion to Strike was filed on Friday, November 8, 2019. The hearing in this matter is scheduled for Friday, November 15, 2019. S.C. Code Reg. § 103-829 requires that such a motion be filed at least ten (10) days prior to a hearing. DESC was first served with the Final Report on November 4, 2019, outside of the ten day window. However, DESC waited four days to file its Motion to Strike or express any other opposition to the Final Report. This filing of the Motion to Strike at this late date – less than one full business day before the parties' Proposed Orders were due in this matter – unfairly prejudices all intervenors and the ORS in their ability to respond to this Motion. For this reason, the Commission denies the Motion to Strike pursuant to S.C. Code Reg. 103-829.

Although the procedural infirmity of the Motion to Strike warrants denial on its own, the Commission will nonetheless discuss the merits of the Motion to Strike. For the reasons stated below, the Commission would have denied the Motion to Strike even if it had been timely filed.

Act 62 of 2019 gave the Commission an important tool in the Independent Third-Party Expert ("Expert").[1] The Expert was statutorily charged with giving its opinion and issuing a report on a myriad of issues and that the Final Report be treated just like all other evidence in the record.[2] No authority was ceded by the Commission to the Expert to make any finding of fact or conclusion of law. Under a plain reading of the statute the Commission may weigh the Final Report just like any other evidence and the Final Report does not commit the Commission to adopt any conclusion.[3] To strike it would effectively nullify the relevant provision of Act 62 and be a complete contradiction to the intent of the South Carolina General Assembly who specifically included the Expert in the statute.

Finally, DESC makes a troubling assertion in their Motion to Strike that the Commission was prohibited from communicating with the Expert under the *ex parte* prohibitions contained in Act 62.[4] All parties agreed and it was ordered by this Commission in Order No. 2019-708 that the *ex parte* prohibitions applied **as between parties and the Expert**. That Order was issued on October 2, 2019.[5] No party appealed or otherwise requested reconsideration of that Order. For DESC to now attempt to challenge that Order and misrepresent to this tribunal the rules of this proceeding in order to set the stage for a possible appeal is wholly inappropriate.

III. STATUTORY STANDARDS

A. PURPA

The Public Utility Regulatory Policies Act, 16 U.S.C. § 824a-3 et seq., ("PURPA") was enacted in the U.S. by Congress in 1978 and was amended most recently in 2005. PURPA's

---

[1] S.C. Code Ann. § 58-41-20(I).
[2] *Id.*
[3] *Id.*
[4] Motion to Strike at Fn. 1.
[5] Commission Order No. 2019-708.

principal goals included controlling power generation costs and ensuring long-term economic growth by reducing the nation's reliance on oil and gas.[6] Another key aim of the statute is to diversify the nation's electric energy supply by requiring electric utilities to purchase the output of small (i.e., less than 80 MW) independently owned alternative energy projects (referred to as "Qualifying Facilities" or "QFs") at the cost the utility would otherwise incur to generate power itself or purchase it from other sources – referred to as the utility's "avoided cost." PURPA was also intended to increase competition from independent power producers by reducing both fuel price risk and the cost of power.[7] Congress required the Federal Energy Regulatory Commission ("FERC") to establish broad guidance regarding the implementation of PURPA, which it has done through rulemaking and numerous orders, but left many of the details of PURPA implementation to the states, subject to compliance with FERC's directives.

There are several aspects of PURPA that are particularly relevant to this proceeding. First, the avoided cost construct was intended by Congress to leave ratepayers indifferent, from the standpoint of rates, whether the utility purchased power from QFs or procured it elsewhere. However, Congress specifically concluded that it was in the interest of utility ratepayers and the American public to promote QF development and diversify the generation portfolios of U.S. utilities. Since all development of capital-intensive electric generation facilities, including that by investor-owned utilities, requires certainty as to cost-recovery over a commercially reasonable period of time, "ratepayer indifference" in the context of PURPA's goal of promoting QF development does not, and cannot, mean zero risk to ratepayers – any more than utility self-built

[6] *Freehold Cogeneration Associates v. Board of Regulatory Commissioners of New Jersey*, 44 F.3d 1178 (3d Cir. 1995).
[7] See, e.g., Public Utility Regulatory Policies Act, Joint Explanatory Statement of the Committee of Conference at 98, Report No. 95-1750 (Oct. 10, 1978).

facilities result in zero risk to ratepayers. Rather, just as the General Assembly recognized in Act 62, it falls to state commissions such as this one to strike a reasonable balance between promoting QF development and protecting ratepayer interests.

Second, based on its view that smaller QFs would have a particularly difficult time negotiating with large monopoly utilities, FERC has required state commissions to adopt pre-approved avoided cost rates for QFs with a capacity of 100 kW or less – referred to as the "standard offer" – and has given states the authority to extend the standard offer to larger QFs.[8] States also may establish standard PPA terms and conditions for any size QF.

Third, also out of a concern about utility bargaining power and potential recalcitrance, FERC has provided that a QF, in the absence of a formal contract, may obligate a utility to purchase its power at the current avoided cost rate by unequivocally committing itself to sell that output to the utility, thereby establishing a Legally Enforceable Obligation ("LEO") to sell power to the utility and for the utility to purchase that power.[9] Although states have considerable latitude in dictating the requirements to establish a LEO, they must observe certain minimum requirements established by FERC, and also cannot impose unreasonable obstacles on the formation of a LEO.

Finally, FERC understood that having the ability to obtain financing was critical to development of QF projects. Based on the understanding that reasonable certainty about long-term revenues was critical to obtaining financing, FERC provided in its regulations that QFs are entitled to enter into long-term contracts for the sale of energy and capacity at rates calculated at the time the contract or other legally enforceable obligation is incurred.[10] FERC has also ruled that

---

[8] 18 C.F.R. § 292.304(c).
[9] 18 C.F.R. § 292.304(d); *JD Wind 1, LLC*, 130 FERC ¶ 61,127, 61,631 (2010).
[10] 18 C.F.R. § 292.304(d).

PURPA PPAs must be of sufficient length to give the QF "reasonable opportunities to attract capital" for its project.[11]

"Reasonable opportunities to attract capital" means that a QF must be able to obtain regularly-available, market-rate financing for the costs of developing, building, and operating their projects. This requires the Commission to consider types, terms, and providers of financing for QFs that are wholly different from the preferential financing that the utility enjoys by virtue of its monopoly status, history, and ability to rate-base the entirety of the cost of its generation facilities.[12] QF financing must not depend on a special program of the financing parties, the presence of a credit enhancement not broadly available, or other special circumstances. The terms and conditions of the QFs' PPAs also must meet standard underwriting criteria within the mainstream capital markets.

B. The South Carolina Energy Freedom Act

Act 62 made substantial reforms to South Carolina's implementation of PURPA as well as other aspects of the state's energy policy. The Commission disagrees with DESC's view that Act 62 did not, in fact, change the status quo or expand the authority of this Commission.[13] Act 62 is essentially a reset of utility regulation as it pertains to a range of issues related to the expansion of renewable energy generation and utility resource planning, and it provides this Commission with both increased direction and discretion in determining the most appropriate path forward for energy development in South Carolina. The Act makes clear that, in promoting South Carolina's policy of encouraging renewable energy, this Commission is directed to address all renewable energy issues in a fair and balanced manner that considers costs and benefits to all customers and

[11] *Windham Solar LLC & Allco Fin. Ltd.*, 157 FERC ¶ 61,134 at ¶ 8 (2016).
[12] Hearing Vol. 2 at 462.4 (Chilton Direct).
[13] Rebuttal Testimony of John Raftery at 9.

establishes just and reasonable rates that reflect changes in the utility industry as a whole. Act 62 also recognizes and prioritizes increased competition and consumer choice within the state's electricity marketplace.

The primary issues covered in the Act include avoided cost methodologies, commercially reasonable contract terms and conditions, customer-sited generation, integrated resource planning, interconnection, community solar, commercial and industrial access to clean energy, integration of renewable energy, rate design, consumer protection, and increased Commission scrutiny of proposals for the construction of new major utility facilities. In implementing all aspects of the statute, the Commission "is directed to address all renewable energy issues in a fair and balanced manner, considering the costs and benefits to all customers of all programs and tariffs that relate to renewable energy and energy storage."[14]

Key to this proceeding, the Commission is required by Act 62 to "open a docket for the purpose of establishing each electrical utility's standard offer, avoided cost methodologies, form contract power purchase agreements, commitment to sell forms, and any other terms or conditions necessary to implement this section."[15] Any decisions by the commission shall be just and reasonable to the ratepayers of the electrical utility, in the public interest, consistent with PURPA and FERC's implementing regulations and orders, and nondiscriminatory to small power producers and shall strive to reduce the risk placed on the using and consuming public.[16]

The setting of avoided cost rates, as well as the terms and conditions that govern contractual obligations between utilities and small power producers ("SPPs"),[17] represents the foundation

---

[14] S.C. Code Ann. § 58-41-05.
[15] S.C. Code Ann. § 58-41-20(A).
[16] *Id.*
[17] In this Proposed Order, the terms QF and SPP are used interchangeably, both in reference to small independent renewable energy power producers up to 80 MW that are eligible to sell

upon which large-scale solar must compete for market share against South Carolina's vertically-integrated monopoly utilities. The development of large-scale solar facilities is a capital- and time-intensive business that relies on fair and balanced treatment of SPPs within the regulatory arena in order to achieve success and meet the goals of Act 62.

Given the multitude of issues before this Commission, it is critical to consider the cumulative impact of even small deviations from the just and reasonable, fair and balanced, and non-discriminatory requirements of Act 62. While any individual flaw or biased assumption in a utility's proposal might seem relatively inconsequential in isolation, the cumulative impact of many such flaws and biases could result in a virtual, if not total, elimination of large-scale solar development in the state. This result would frustrate the intent of the General Assembly when enacting Act 62, while also depriving utility customers of the myriad benefits that accompany solar energy development.

The Commission is also directed to "treat small power producers on a fair and equal footing with electrical utility-owned resources" by ensuring that:

> (1) Rates for the purchase of energy and capacity fully and accurately reflect the electrical utility's avoided costs;
> (2) Power purchase agreements ("PPAs") approved by the Commission are commercially reasonable and consistent with regulations and orders promulgated by FERC implementing PURPA; and
> (3) Each electrical utility's avoided cost methodology fairly accounts for costs avoided by the electrical utility or incurred by the electrical utility, including, but not limited to, energy, capacity, and ancillary services provided by or consumed by small power producers including those utilizing energy storage equipment.

Id.

Consistent with the language and intent of Act 62, this Commission must adopt just and reasonable rates, terms, and conditions that serve to "promote the state's policy of encouraging

---

energy and capacity to the Companies under PURPA and Act 62. Such facilities may also be referred to as "large-scale" or "utility-scale" solar facilities.

renewable energy." Artificially low avoided cost rates, inflated integration costs, and commercially unreasonable contractual terms and conditions would fail to satisfy the statutory requirements pertinent to this proceeding. Therefore, it is incumbent on this Commission to fairly deliberate on the credibility of the alternative analyses presented by intervening parties and determine whether those alternative analyses satisfy the requirements and serve to advance the goals of Act 62.

Act 62 was also intended to ensure that the Commission would be equipped to conduct a critical analysis of the utilities' avoided cost proposals, by requiring it to engage a third-party consultant or expert to conduct an independent analysis of those proposals and submit a report containing its independently-derived conclusions. This report is intended to be used by the Commission along with all other evidence to inform its ultimate decision.[18] For this proceeding, the Commission retained Power Advisory LLC ("Power Advisory") on September 3rd to serve as the independent third-party consultant. Power Advisory is a management consulting firm focused on the North American electricity sector, and its lead consultant, John Dalton, has over thirty years of expertise as an electricity market analyst and policy consultant.[19] Power Advisory's responsibilities in this docket include drafting and review of PPAs, assessing renewable energy technology costs, evaluating the requirements to integrate variable output energy resources, and reviewing utility avoided cost. Power Advisory issued interrogatories and requests for production of documents to DESC and reviewed the Company's responses, as well as all testimony filed in this docket. Power Advisory also monitored the hearing, and its final report to this Commission was issued on November 1st ("Power Advisory Report").

[18] S.C. Code Ann. § 58-41-20(I).
[19] Power Advisory Report at 3.

Finally, the legislature evidenced its concern with the transparency and reviewability of the utilities' avoided cost calculations, by requiring that "each electrical utility's avoided cost filing must be reasonably transparent so that underlying assumptions, data, and results can be independently reviewed and verified by the parties and the commission." S.C. Code Ann. § 58-41-20(J).

The responsible development of solar energy in South Carolina advances consumer preference, increases consumer choice, shields ratepayers from the inherent risks associated with utility-owned generation and investments, promotes local economic development, and furthers the goals of Act 62. Ultimately, the decisions made by this Commission in these proceedings will determine in large part whether or not these attributes of independently owned solar energy will materialize for the benefit of South Carolina as intended by the General Assembly.

C. The Obligation to Reduce Ratepayer Risk under Act 62

Act 62 requires that in deciding issues related to avoided cost, this Commission "shall strive to reduce the risk placed on the using and consuming public."[20] The parties have different understandings of the significance of this provision, and in particular the scope of risks that the Commission must consider.

On the one hand, DESC believes that its customers are already adequately protected from risk associated with utility-owned generation based on pre-Act 62 statutes like the Siting Act, as well as the SCSBA-DESC merger settlement, which requires all-source competitive solicitations for any new major utility generating resources approved before 2024.[21] DESC also claims that

[20] S.C. Code Ann. § 58-41-20(A).
[21] Hearing Vol. 1 at 41.7-49.9 (Raftery Rebuttal)

long-term PPAs place risk on customers because of the potential for future improvements to technology[22] and potential overpayment if avoided cost rate drop in the future.[23]

Intervenors, on the other hand, take a broader view of the risks that Act 62 requires this Commission to consider. Intervenors argue that the Commission should also consider the many risks to ratepayers that accompany utility-owned generation, like project cost-overruns and delays, fuel volatility, waste-managements costs, and future environmental regulatory costs. In response to Commissioner examination at the hearing, SCSBA Witness Davis further illustrated this point by noting that the contract tenor for solar facilities in South Carolina will be for a fraction of the solar facility's useful life, but when a utility builds a new generating asset, like a natural gas plant, that represents risk exposure to customers for the lifetime of that asset.[24]

On consideration of the language and purposes of Act 62, the Commission concludes that DESC's interpretation of the "risk reduction" provision of the statute is unreasonably narrow. Act 62 is not exhaustive or limiting in describing the kinds of risk this Commission should consider. Nor does the context in which the Act was passed suggest that the General Assembly was exclusively (or even principally) concerned with the risks of long-term PURPA PPAs. To the contrary, the General Assembly specifically concluded that ten-year PURPA PPAs are in the interest of ratepayers. And given the recent history of investor-owned utility generation projects in South Carolina, it is implausible to suggest that the General Assembly would not have been concerned with the risks of those projects to ratepayers.

IV. HEARING

[22] Direct Testimony of John Folsom at 8.
[23] Hearing Vol. 1 at 141.24 (Raftery Examination by Whitfield)
[24] Hearing Vol. 2 at 593.10 (Davis Examination by Belser)

In order to consider the merits of this case, the Commission convened a hearing on this matter on October 14-15, 2019, with the Honorable Comer H. "Randy" Randall presiding. DESC was represented by K. Chad Burgess, Esquire; Matthew W. Gissendanner, Esquire; Belton T. Zeigler, Esquire; Mitchell Willoughby, Esquire. SCEUC was represented by Scott Elliott, Esquire. CCL and SACE were represented by Stinson Woodward Ferguson, Esquire; J. Blanding Holman, IV, Esquire; and Lauren Joy Bowen, Esquire. SCSBA was represented by Benjamin L. Snowden, Esquire; Weston Adams, III, Esquire; and Jeremy C. Hodges, Esquire. JDA was represented by James H. Goldin, Esquire; Weston Adams, III, Esquire; and Jeremy C. Hodges, Esquire. Ecoplexus was represented by Richard L. Whitt, Esquire. Walmart was represented by Carrie Harris Grundmann, Esquire. Nanette S. Edwards, Esquire; Andrew M. Bateman, Esquire; and Alexander W. Knowles, Esquire, represented ORS. In this Order, ORS, SCEUC, CCL, SACE, SCSBA, JDA, Ecoplexus, Walmart and DESC are collectively referred to as the "Parties" or sometimes individually as a "Party."

DESC presented the direct testimonies and exhibits of John H. Raftery, John E. Folsom, Eric H. Bell, Thomas E. Hanzlik, Joseph M. Lynch, Matthew M. Tanner; Allen W. Rooks; and James W. Neely. ORS presented the direct testimonies and exhibits of Brian Horii and Robert A. Lawyer. CCL and SACE presented the direct testimony and exhibits of Derek P. Stenclik and James F. Wilson. SCSBA presented the direct testimony and exhibits of Hamilton Davis, Jon Downey, Edward A. Burgess, and Steven J. Levitas. JDA presented the direct testimony of Rebecca Chilton. Ecoplexus, SCEUC, SCDCA, and Walmart did not present witnesses at the hearing. In response to the direct testimony filed by CCL and SACE, SCSBA, JDA and ORS, DESC presented the rebuttal testimony and exhibits of Witnesses Raftery, Bell, Hanzlik, Lynch, Tanner, Neely, Rooks and Daniel P. Kassis. In response to DESC's rebuttal testimony, CCL and

SACE filed surrebuttal testimony of Witnesses Stenclik and Wilson; SCSBA filed surrebuttal testimony of Witnesses Davis, Burgess, and Levitas; JDA filed surrebuttal testimony of Witness Chilton; and ORS filed surrebuttal testimony of Witness Horii.

V. REVIEW OF THE EVIDENCE AND EVIDENTIARY CONCLUSIONS

After hearing the evidence and testimony of the witnesses, the Commission reaches the following factual and legal conclusions:

A. Act 62 and Ratepayer Risk

Act 62 requires the Commission, in considering issues related to avoided cost, to "strive to reduce the risk placed on the using and consuming public." S.C. Code Ann. § 58-41-20(A). The parties take fundamentally different views of how this provision should inform the Commission's decision-making.

1.DESC Direct Testimony

DESC Witness Raftery's direct testimony suggests that correctly and accurately calculated avoided cost rates will meet the statutory requirements of Act 62 by ensuring customers would be economically indifferent to purchases of QF power.[25] DESC Witness Folsom's direct testimony discusses the risk of developers "locking-in" rates for long-term PPAs without having made a substantial commitment to sell the electric output of a solar facility, which may be less economical in the face of potential future improvements in technology.[26] Mr. Folsom also supporting crafting rules that allow for the development of the best products today while allowing for the technological advancements of tomorrow.[27]

2.SCSBA Direct Testimony

[25] Direct Testimony of John Raftery at 11.
[26] Direct Testimony of John Folsom at 8 and 10.
[27] *Id.* at 8.

Although the SCSBA also recognizes and acknowledges the risk of "overpayment" for PURPA contracts if PPA rates are higher than the actual costs avoided by a utility, SCSBA witnesses also point out the risk associated with utility-owned generation and the requirements in Act 62 that suggest these risks should be taken into consideration during this proceeding. SCSBA Witness Davis testified that ratepayer risk also extends to utility development and ownership of other generating resources, against which SPPs provide a significant risk hedge.[28] Mr. Davis provides a comprehensive list of potential and actual risks associated with utility-owned generation that do not accompany SPP-owned generation resources, including ratepayer risk associated with fuel volatility for resources like natural gas, project abandonment costs as seen with the Summer and Lee nuclear reactors, and environmental regulatory costs as are now being collected from customers for coal ash management expenses.[29]

SCSBA Witness Burgess reinforces the testimony of Mr. Davis and also points out that artificially low avoided cost rates can stifle competition that should otherwise function to drive utility resource costs down over time, as well as undermine the overall diversity DESC's resource mix.[30] Mr. Burgess also provides additional analysis from outside of South Carolina demonstrating the ability of smaller generation resources like QF solar to deliver less financially risky value to customers relative to traditional large-scale utility-owned resources like nuclear and natural gas.[31]

3.ORS Direct Testimony

---

[28] Direct Testimony of Hamilton Davis at 8.
[29] *Id.* at 11-14.
[30] Direct Testimony of Edward Burgess at 11.
[31] *Id.* at 12-15.

ORS Witness Lawyer testified that DESC's proposed variable integration charge represents a rate *design* that seeks to minimizes risk to customers by assigning integration costs directly to QFs.[32]

4.DESC Rebuttal Testimony

DESC Witness Raftery's rebuttal testimony concludes that there are no risk considerations pertinent to this proceeding related to utility-owned generation because customers are already protected from those risks by South Carolina's Siting Act and by provisions related to all-source competitive procurement within the SCSBA-DESC merger settlement.[33] Mr. Raftery also maintains that solar will not displace capacity needs from the DESC system and thus, does not insulate customers from any risk associated with the construction of new facilities required to meet the Company's capacity needs.[34]

DESC Witness Kassis's rebuttal testimony includes a reference to the FERC Notice of Proposed Rule Making ("NOPR") issued in September 2019, whereby a portion of the record developed in FERC's recent technical conference indicates that allowing a QF to fix its avoided cost rate at the time a Legally Enforceable Obligation is incurred has resulted in overpayment to developers.[35]

5.SCSBA Surrebuttal Testimony

SCSBA Witness Davis's surrebuttal testimony is responsive to claims by Witness Raftery that solar does not provide a risk-hedge to customers as it relates to utility-owned generation. Mr. Davis notes that Mr. Raftery's assertion is based on the contested assumption that solar does not

[32] Direct Testimony of Robert Lawyer at 5.
[33] Hearing Vol. 1 at 48.7 (Raftery Rebuttal Summary)
[34] *Id.*
[35] Rebuttal Testimony of Daniel Kassis at 13.

provide capacity value to the DESC system and ignores the role of solar + storage in satisfying the Company's capacity needs.[36] Mr. Davis also rejects Mr. Raftery's contention that risk-mitigation measures built into South Carolina's regulatory structure obviate the need for this Commission to consider those risks in these proceedings. Mr. Davis points out that the recent history of plant abandonments, mounting coal ash costs, and natural gas price volatility all contradict Mr. Raftery's testimony on risk considerations maintains that SPPs provide a significant risk-hedge against the bevy of risks borne by ratepayers that flow from utility-owned generation and that Act 62 places these risks squarely in the purview of this Commission during this proceeding.[37]

6.Testimony at the Hearing

During cross examination, DESC Witness Raftery acknowledged that South Carolina's Siting Act is not able to protect ratepayers from all risk but maintained that it is a meaningful part of statutory authority that provides Commission oversight of utility generation projects greater than 75 megawatts.[38] DESC Witness Kassis testified that shorter PPA contract length can offset some of the risk associated with potential overpayment to QFs if avoided cost calculations end up being too high.[39]

DESC Witness Neely testified that along with the uncertainty that comes with forecasting future avoided cost, there is also uncertainty associated with the projections used to justify a new utility-owned generation resource.[40] Mr. Neely stated unequivocally that there is a "risk of cost overruns with every construction project I've ever seen," as well as risks related to construction

---

[36] Rebuttal Testimony of Hamilton Davis at 3-4.
[37] *Id.* at 5-6.
[38] Hearing Vol. 1 at 92.18-25 (Raftery Cross Examination).
[39] Hearing Vol. 1 at 142.4-20 (Kassis Examination by Whitfield)
[40] Hearing Vol. 1 at 346.11-22 (Neely Cross Examination by Snowden)

delays and project cancellation.[41] Mr. Neely then confirmed that if a QF solar project experiences cost overruns, delays, or cancelation, it is the solar provider that bears those risks and the ratepayers bear none of that risk.[42] Finally, Mr. Neely acknowledged that if natural gas prices go up as the EIA predicts, then longer term PPAs locked in at lower prices would be protective of ratepayers.[43]

JDA Witness Chilton testified that although there is a predictive aspect to setting avoided cost rates that makes them uncertain, longer term PPAs are nonetheless shorter than utility-owned generation resources that lock customers into a type of generation that is affected by changing fuel prices and changes in technology.[44]

SCSBA Witness Downey testified that solar project development is actually exposed to most of the same risks that face utility-owned generation, with the significant difference being that solar developers bear those risks on their own balance sheet and cannot passed those risks along to ratepayers.[45] SCSBA Witness Davis emphasized that the risk assessment by this Commission comparing QF solar projects with utility-owned generation is central to the legislative language around fair and equal footing and consideration of risk within Act 62.[46] Additionally, Mr. Davis points out that the useful life of a solar facility extends beyond 30 years but the PPA tenor for QF projects in South Carolina is much shorter than that, which stands in stark contrast to utility-owned generation like a natural gas plant that exposes customers to risk for the lifetime of the asset.[47] Ultimately, Mr. Davis concluded that when this Commission is balancing the risk and value to

---

[41] *Id.* at 347.9-348.15
[42] *Id.* at 349.20-350.8
[43] Hearing Vol. 1 at 366.11-24 (Neely Cross Examination by Goldin)
[44] Hearing Vol. 2 at 468.4-22 (Chilton Examination by Belser).
[45] Hearing Vol. 2 at 592.2-19 (Downey Examination by Belser).
[46] Hearing Vol. 2 at 594.2-7 (Davis Examination by Belser).
[47] *Id.* at 592.24-593.19

customers of generating facilities owned by QFs versus a utility, that Act 62 requires an even playing ground for making those considerations.[48]

7.The Commission's Conclusions Regarding Act 62 and Ratepayer Risk

A primary policy objective of Act 62 is to benefit the customers of South Carolina utilities. Among other things, Act 62 requires that in setting avoided cost rates, the Commission must "strive to reduce the risk placed on the using and consuming public." S.C. Code Ann. 58-41-20(A). Act 62 also requires that the Commission's decisions be just and reasonable, in the public interest, consistent with PURPA and FERC orders and regulations, and "treat small power producers on a fair and equal footing with electrical utility-owned resources."

DESC posits that solar does not provide any risk-hedge because solar does not provide any capacity value to its system and that any risk associated with utility-owned generation is mitigated by pre-Act 62 statutory requirements found in the Siting Act and the SCSBA-DESC merger settlement. DESC identifies the risk of overpayment to QFs as the primary risk consideration at issue in this proceeding. The Commission disagrees. DESC takes an unreasonably constrained view of the risks to be considered under Act 62. While all parties acknowledge the risk of overpayment if avoided cost rates are set too high, this Commission also agrees with the SCSBA that it is appropriate and necessary under Act 62 to consider the risks avoided by QF development. As acknowledged by DESC at the hearing, when a utility purchases power under a long-term QF PPA rather than building a new generating unit, ratepayers are completely insulated from the myriad cost-related risks associated with new construction, which are borne entirely by the QF.[49] The ratepayer pays only the energy and capacity value of the power actually produced by the QF.[50]

[48] Hearing Vol. 2 at 609.11-22 (Davis Examination by Williams).
[49] Hearing Vol. 1 at 349.20-350.8 (Neely Cross Examination).
[50] *Id.*

This Commission finds that the intent of the General Assembly in passing Act 62 was that a broad consideration of risk to ratepayers be taken into account during this proceeding. The plain language of the statute does not limit risk assessment to QF contracts, and the recent history of plant abandonments and mounting costs associated with coal ash management make a broader perspective on ratepayer risk appropriate.

As noted in the Power Advisory Report, DESC's calculated avoided costs are substantially lower than historical rates paid to QFs in South Carolina, which reduces the potential magnitude of overpayment risk.[51] Additionally, the Power Advisory Report recognizes that the primary driver of recent declines in energy prices have been driven by low natural gas prices and that additional declines are expected to be less of a factor in the future.[52] This Commission has determined that overall risk to the ratepayers will be reduced by long-term PPAs for QF solar and that there is a declining risk of overpayment to solar QFs due to historically low natural gas prices.

Similarly, this Commission also finds that QF solar insulates ratepayers from the multitude of risks associated with utility-owned generation. Unlike QF solar, increased costs associated with project delay and abandonment, environmental regulations, and fuel volatility are often passed along directly to utility customers. Having a larger portion of energy and capacity be provided by QF solar is a goal of Act 62 and satisfies this Commissions responsibility to reduce risk to ratepayers.

On consideration of these factors, the Commission finds that in the current environment of low avoided cost rates and low natural gas prices, fixed-price PURPA PPAs reduce, rather than increase, risk to ratepayers. In addition, contracts for terms of longer than ten (10) years may also

[51] Power Advisory Report at 27.
[52] *Id.*

result in a net decrease in ratepayer risk as compared to a business-as-usual approach to development of utility-owned generation.

B. DESC's Proposed Solar Integration Charges

1.DESC Direct Testimony

In this proceeding DESC has proposed charges that it asserts represent the costs it incurs to integrate intermittent renewable energy generation onto its electric system. DESC proposes two forms of integration charge, a Variable Integration Charge ("VIC"); and (2) an embedded integration charge ("EIC"). DESC proposes to impose the VIC retroactively on approximately 700 MW of solar QFs with existing PPAs.[53] The proposed VIC is based on a study conducted by Navigant Consulting, Inc. ("Navigant") published in August 2019 entitled "Cost of Variable Integration" ("VIC Study") DESC presented the testimony of Witness Tanner of Navigant to describe the VIC Study's methodology and results. The VIC Study attempted to calculate the level of additional reserves that DESC would require in order to integrate a specific amount of solar into DESC's system. Witness Tanner testified that based on the VIC Study, a VIC of $4.14/MWh would be warranted for these existing 700 MW of solar projects.[54] Witness Tanner acknowledged that it would be possible for solar to be added to the grid without requiring the Company to hold additional reserves, and Mr. Tanner described potential operational changes that could potentially allow a solar facility to avoid a VIC, although Mr. Tanner stated that such conditions "need to be defined in the future."[55]

DESC Witness Folsom described the proposed administration of the VIC, including how the VIC would appear on QF bills and that it would be fixed at $4.14/MWh for the duration of the

---

[53] Hearing Vol. 1 at 59.16 (Folsom Direct).
[54] Hearing Vol. 1 at 290.11 (Tanner Direct).
[55] *Id.* at 290.22.

PPA.[56] DESC Witness Bell also described the rationale for the VIC and summarized the methodology and findings of the Navigant Study.

DESC Witness Neely described the proposed EIC for prospective QFs, which DESC has proposed embedding into the avoided energy rate for solar QFs.[57] The EIC assumed that additional reserves equal to 35% of the installed solar nameplate capacity are required to successfully integrate solar resources.

2.SCSBA Testimony

SCSBA Witness Burgess critiques DESC's proposed VIC and EIC. Mr. Burgess emphasized that Act 62 provides specific guidelines for the Commission to conduct an independent integration study, pursuant to S.C. Code Ann. § 58-37-60. Rather than relying on a study commissioned by DESC without stakeholder input or neutral third-party analysis, Mr. Burgess recommends that the Commission conduct the independent integration study contemplated by Act 62 before determining whether any integration charge is appropriate.

With respect to the VIC, Mr. Burgess also addresses methodological flaws in the Navigant Study used by DESC to calculate and justify the VIC, including 1) modelling the balancing authority area as an island; (2) applying a flawed volatility profile; (3) using a 4-hour forecast; and (4) applying reserve requirements during non-solar hours.[58] Mr. Burgess recommends that if the Commission were to adopt an integration charge in this proceeding before conducting the independent integration study, multiple alterations to the calculation of the VIC should be made to address the significant deficiencies in the Navigant Study. Mr. Burgess performed these alterations

[56] Folsom Direct at 15-16.
[57] Neely Direct at 9.
[58] Burgess Direct at 64-65.

that attempted to correct for the methodological flaws that Mr. Burgess identified.[59] From these alterations, Mr. Burgess arrived at a VIC of $0.96/MWh.[60]

With respect to the EIC, Witness Burgess criticizes DESC's lack of analysis or study to arrive at its assumed 35% reserves assumption.[61] Mr. Burgess identifies and described a variety of methodological flaws in the methodology DESC used to establish the EIC.[62] Mr. Burgess notes that the approximately $6.70/MWh EIC is unsupported and is far in excess of integration charges adopted in other jurisdictions, and Mr. Burgess recommends that the EIC be rejected pending further analysis and study.[63]

3.CCL and SACE Testimony

CCL and SACE Witness Stenclik explains through his prefiled testimony and Expert Report that the Navigant Study contained multiple serious methodological flaws and should be rejected. These flaws led the Navigant Study to calculate an unreasonable and excessive VIC that would impose costs on solar QFs that are not rationally related to any integration costs these QFs might actually impose upon the utilities' systems.[64] These included (1) assuming inappropriately high reserve requirements; (2) applying reserve requirements during all hours including non-solar hours; (3) failing to consider available existing reserve requirements on DESC's system; (4) failing to consider less-costly ways to integrate solar; (5) applying the VIC only to solar resources. Mr. Stenclik also discusses how other jurisdictions have adapted to increased renewable penetration on the grid and explained that contrary to the Navigant Study's findings, the cost of renewable

---

[59] Hearing Vol. 2 at 523.92-.93 (Burgess Direct).
[60] *Id.*
[61] *Id.* at 79.
[62] *Id.* at 80-81.
[63] *Id.* at 81.
[64] Stenclik Direct at 4-6.

integration does not increase, and has in fact decreased as renewable penetration increases. Witness Stenclik recommends that DESC be required to conduct an updated analysis to correct the issues that he has identified, and he recommended the use of a Technical Review Committee to guide any integration study process. Mr. Stenclik recommends that until these actions are taken, the proposed VIC should be rejected and should not be applied to existing solar facilities.[65]

4.ORS Testimony

ORS Witness Horii testified that in his experience integrating renewable generation can create additional costs for utilities by requiring additional ramping capability and reserves to meet the intermittent nature of solar and wind generation, which can include higher start-up costs, fuel costs, and O&M costs. Mr. Horii testified that although he considered the Navigant Study to apply a generally acceptable approach to estimating solar integration charges, he did not believe that the VIC represented a reasonable estimate of renewable integration cost.[66] Witness Horii identified the following flaws in the Navigant Study which led to an inflated integration cost: (1) failing to conduct an analysis that balances risks and costs to determine the additional amount of operating reserves that would need to be carried due the existence of variable solar resources on the system; (2) the Company is unreasonably risk averse in its determination of the amount of additional operating reserves due to potential solar forecast error; and 3) overstating operating reserves needed by holding reserve levels constant over each day.[67] Mr. Horii performed an alternative analysis in which he attempted to correct for the flaws he identified in the Navigant Study.[68] Mr. Horii's alternative analysis resulted in a proposed VIC of $2.29/MWh.[69] Witness Horii also

[65] *Id.* at 10-11.
[66] Hearing Vol. 2 at 695.10 (Horii Direct).
[67] *Id.* at .11.
[68] *Id.* at .14-.16.
[69] *Id.* at .19.

recommended that DESC engage in technical stakeholder workshops to further address its VIC methodology in the future.[70]

Also, with respect to the EIC, Witness Horii testified that DESC has created a "confusing" system in which the VIC is calculated through the Navigant Study and the EIC is included as a decrement to the avoided energy rate.[71] Mr. Horii recommends that integration costs not be included in the PR-1 or Standard Offer rates.[72]

5.DESC Rebuttal Testimony

In rebuttal testimony Witness Tanner responded to the direct testimony of ORS Witness Horii, SCSBA Witness Burgess, and CCL/SACE Witness Stenclik. Mr. Tanner defended the Navigant Study and the methodology that led to the proposed VIC. In response to Witness Burgess, Mr. Tanner acknowledged that expanding a reserve sharing group or joining balancing authority areas could help to decrease any cost of integrating renewables but that Mr. Tanner considered this beyond the scope of the Navigant Study.[73] Mr. Tanner affirmed his position that solar facilities providing flexibility to DESC in such a way that there is no need to hold additional reserves, then those specific resources should not be charged a VIC as they are not increasing system costs.[74]

Witness Bell similarly defended the Navigant Study and the proposed VIC.[75] Mr. Bell also defended the Company's use of a 35% reserve requirement assumption in the context of the proposed EIC.[76] In response to CCL/SACE Witness Stenclik's recommendation that the Commission not approve any integration charge until it has conducted the independent study

[70] *Id.* at .23-.24.
[71] *Id.* at .9.
[72] *Id.*
[73] Hearing Vol. 1 at 300.16 (Tanner Rebuttal).
[74] *Id.* at 20.
[75] Hearing Vol. 1 at 176.2-3 (Bell Rebuttal).
[76] *Id.* at 3.

permitted under Act 62, Witness Neely argues that the EIC does not actually represent an integration charge because it is embedded as part of the avoided energy cost and, therefore, the EIC is appropriate.[77]

6.Intervenors' Surrebuttal

In surrebuttal testimony, SCSBA Witness Burgess maintains his criticism of the VIC and the EIC, emphasizing that DESC had not supported its proposed integration charges and that any charge imposed on customers at this time would be speculative and inappropriate.[78] In response to DESC Witness Tanner's rebuttal testimony addressing Mr. Burgess's criticism of the Navigant Study's use of "islanding", Mr. Burgess states that DESC appears to be conflating the issues of long-term capacity planning for reliability and near-term operations for managing variable load and resources.[79] Witness Burgess notes that power flows between surrounding utilities to manage variability on an operational time horizon are quite common, and should be seen as distinct from the long-term planning and procurement of resources each utility undertakes to ensure sufficient resources on its system. Mr. Burgess concludes that it is entirely appropriate to assume some level of interaction on an operational time horizon and this does not constitute a violation of "self-sufficiency."[80]

Mr. Burgess also notes that Witness Tanner agreed that combining balancing authority areas or expanding reserve sharing agreements could decrease any integration cost.[81] Witness Burgess further responds to Witness Tanner's claim that modeling four solar projects across the state accurately captured geographic diversity benefits, explaining that modeling only four projects

[77] Hearing Vol. 1 at 319.20 (Neely Rebuttal).
[78] Hearing Vol. 2 at 527.5 and .7.
[79] *Id.* at 527.12.
[80] *Id.*
[81] *Id.*

is insufficient. He also recommends that DESC test the assumption that geographic diversity had been accurately captured by simulating additional locations within DESC's service territory.[82] In addition, Witness Burgess responds to Witness Tanner's testimony that other jurisdictions had increased flexible reserves in order to integrate renewable resources, and questioned the relevance of Witness Tanner's statements since DESC's analysis did not appear to focus on what flexible ramping requirements DESC might have, and instead focused on regulation and load following reserve necessary to address solar drops.[83]

CCL/SACE Witness Stenclik defends and maintains his testimony, including his analysis of required operating reserves, NERC standards, and potential interaction with neighboring utilities, and he maintained his recommendations and conclusions regarding the Navigant Study and the proposed VIC and EIC. Mr. Stenclik reiterates his concerns with the methodology used in the Navigant Study, including his recommendation that no integration charge should be imposed until further study is conducted, which "would allow for a more transparent and accurate calculation of integration cost that includes stakeholders and additional technical experts" which would represent a more prudent option.[84] Mr. Stenclik testifies that "[u]sing the values developed in [the Navigant Study] would add long-term, incorrectly-calculated contractual costs to solar projects. This would increase the price of solar power in South Carolina on a false basis, thereby denying ratepayers the economic benefit of renewable energy that is actually cost-effective."[85]

ORS Witness Horii maintains that DESC's 35% reserve assumption used to calculate its EIC was unsupported and inappropriate.[86] Mr. Horii also maintains his analysis that the VIC was

[82] Hearing Vol. 2 at 527.13.
[83] Hearing Vol. 2 at 527.14.
[84] *Id.* at 640.17-.18.
[85] *Id.*
[86] Hearing Vol. 2 at 697.2-3, and .6.

calculated using a flawed Navigant Study and that the methodology Mr. Horii used in his direct testimony to calculate an alternative VIC was appropriate.[87]

7.Consultant's Conclusions

Power Advisory concludes that DESC had failed to adequately justify its proposed VIC and EIC. Power Advisory states that the most significant flaws in the proposed integration charge methodologies were (1) inappropriate choice of data to analyze solar intermittency; (2) lack of support for the risk threshold used to determine additional reserve requirements; (3) inappropriate modeling of the additional reserve requirements; and (4) inadequate consideration of alternative sources of reserve capacity.[88] Power Advisory concludes that "neither DESC's nor Navigant's analyses of solar intermittency provide good bases for estimating the quantity of additional reserves that will be required, likely resulting in significant overestimation of the amount of additional reserves required and the associated costs."[89] With respect to the risk threshold assumptions incorporated into the calculation of the VIC and EIC, Power Advisory concludes that "none of the three standards used by DESC to determine the additional reserves attributable to solar generation (35% of nameplate capacity for the avoided cost calculations, up to 32% of installed capacity for the VIC calculations, and DESC System Control's 40% of forecast generation) have been adequately justified as a reasonable balance between costs and risks" and that "greater analytical rigor is required than DESC has employed to ensure a reasonable trade-off between reserve costs and risks."[90] With respect to reserve requirements modeled for the VIC and EIC, Power Advisory states that "both DESC and Navigant maintained high reserve levels even

[87] *Id.* at 697.11-.12.
[88] Power Advisory Report at 8.
[89] *Id.* at 12.
[90] *Id.* at 15.

when solar generation was modeled to be low. It is likely that this contributed to over-estimation of the cost of maintaining additional reserves, because many of the hours when reserve levels are low (and the cost of maintaining additional reserve levels is therefore likely to be high) occur in the early morning when there is little or no solar generation." Power Advisory concludes that "DESC has not provided convincing evidence that holding constant levels of additional reserves, either in all hours or in all solar generating hours (avoided cost analysis), does not significantly overstate solar integration costs."[91] With respect to alternative sources of reserve capacity, Power Advisory concludes that "Navigant and DESC did not adequately evaluate alternative means of ensuring adequate reserves. It is impossible to determine, based on the evidence submitted, whether combustion turbines or batteries would be cost-effective if other value streams were considered; if demand response targeted at providing flexible reserves appropriate for solar integration would be cost effective; or how likely it is that some kind of reserve sharing for solar integration will occur at some point over the period for which these rates would apply."[92]

Power Advisory generally concludes that "DESC's proposed values for the solar VIC, and solar integration costs embedded in its proposed avoided costs, are insufficiently supported by the evidence."[93] Power Advisory recommends that "[g]iven the lack of evidence to support DESC's estimates of solar integration costs, Power Advisory recommends that a cost study be undertaken as part of the independent study recommended in Act 62 to evaluate the integration of renewable energy and emerging energy technologies into the electric grid."[94] However, based on the existence of the Partial Settlement in the Duke Energy proceeding, Power Advisory stated that it was

[91] *Id.* at 19.
[92] *Id* at 21-22.
[93] *Id.* at 22.
[94] *Id.*

"reluctant to recommend that there be no solar integration charge" and recommended an "interim" charge of $2.29 be applied for the VIC and the EIC, based on ORS Witness Horii's recommendation, pending the completion of an independent analysis as contemplated in Act 62.[95] Power Advisory noted that it "did not support the specific calculations [Mr. Horii] used to arrive at $2.29/MWh, because it is based on Navigant's analysis, which is flawed in several ways, only one of which Mr. Horii attempts to correct" but that in Power Advisory's opinion the $2.29/MWh figure was a reasonable interim charge.[96]

8.The Commission's Conclusions Regarding the Proposed VIC

S.C. Code Ann. § 58-41-20(B)(3) requires the Commission to ensure that each electrical utility's avoided cost methodology fairly accounts for costs avoided by the electrical utility or incurred by the electrical utility, including but not limited to, energy, capacity, and ancillary serves provided by or consume by small power producers including those utilizing energy storage equipment. S.C. Code Ann. § 58-37-60 permits the Commission and ORS to initiate an independent study to evaluate the integration of renewable energy and emerging energy technologies into the electric grid for the public interest. These proceedings represent the first instance in which the Commission has been asked to consider the adoption an "integration charge" of this type that would apply to solar energy generators.

Based on the evidence in the record, the Commission agrees with the testimony of ORS, SCSBA, CCL/SACE, and the conclusions of Power Advisory that DESC has failed to adequately justify or support its proposed integration charges.

Variable Integration Charge (Retroactive charge)

---

[95] *Id.* at 23-25.
[96] *Id.* at 24.

With respect to the VIC, the Commission finds persuasive the evidence presented by CCL/SACE Witness Stenclik, SCSBA Witness Burgess, and ORS Witness Horii that the Navigant Study used to derive the VIC is fundamentally flawed and that its results should not be relied upon to calculate a VIC that would apply to approximately 700 MW of solar projects with existing PPAs. The Navigant Study's improper assumptions regarding the choice of data to analyze solar intermittency, the risk threshold used to determine additional reserve requirements, the failure to consider reserve levels on a sub-hourly basis, the modeling of the additional reserve requirements, and the failure to give serious consideration of alternative sources of reserve capacity result in a study that is fatally flawed. Based on the substantial flaws in the Study's methodology, the Commission concludes that DESC has not sufficiently demonstrated that it would be reasonable to impose such a charge on existing solar facilities in DESC's service territory. DESC has failed to meet its burden of proof in supporting its proposed VIC, and the Commission rejects the results of the Navigant Study, including the imposition of any charge using this flawed methodology.

Further, DESC asks that this Commission approve the imposition of retrospective VIC on certain existing solar projects (whether planned, under construction, or already operating) in DESC territory. DESC asserts that of the approximately 1000 MW of projects currently under contract with DESC and/or SCE&G, about 700 MW of projects have the "VIC Clause." As discussed above, the Commission concludes that DESC has not provided a reasonable quantification of the costs of integrating these solar projects on its system, and for that reason will not approve imposition the proposed VIC.

In addition, however, the Commission finds and concludes that it is not reasonable or appropriate for DESC to impose any retrospective integration charge on these projects. There are several reasons for this. First, as noted only about 700 MW of the 1000 MW of projects under contract have the authorizing language in their PPAs. DESC has not explained why it would be appropriate for some but not all of these existing projects to be assessed retrospective integration charges, and the Commission finds that it would be discriminatory to impose the charge on only a those projects. Second, it is DESC's position that integration charges are properly considered an element of "avoided cost" under PURPA and Act 62, as evidenced by DESC's inclusion of its proposed prospective integration charge (the EIC) in the avoided energy rates for QF projects going forward. PURPA regulations provide that avoided cost pricing for QFs must be fixed as of the date the QF enters into a contract or other legally enforceable obligation and is not subject to later adjustment. 18 C.F.R. § 282.304(d)(2).[97] To retroactively adjust the rates paid to these projects after the fact would violate that legal requirement. It would also substantially undermine the "revenue certainty" that JDA Witness Ms. Chilton testified was necessary to solar project development and could substantially undermine QFs' ability to finance and construct those projects. This strikes the Commission as bad public policy and contrary to the goals of Act 62.

Also, the Commission has serious reservations about the approach DESC and its predecessor, SCE&G, have taken to imposing this VIC on exiting projects. As the incumbent utility and sole buyer for QFs' power in its service territory, DESC has far greater bargaining power in negotiations than QFs, whose only recourse in a dispute over terms is to file a complaint with the commission (unlike in a typical commercial transaction, in which the seller generally has other options and the buyer actually wants what the seller is selling.) DESC's approach of

[97] The Commission notes that although Act 62 now requires the utilities' avoided cost rates to account for the cost of "ancillary services provided by or consumed by small power producers" (a term which would include the reserve requirements that DESC attributes to solar QFs), prior to the passage of Act 62 there was no requirement under either PURPA or South Carolina law that "integration costs" be considered. And indeed, FERC guidance on the factors that "shall, to the extent practicable, be taken into account" in calculating avoided cost do not include reserve requirements or other ancillary services requirements. 18 C.F.R. § 292.304(e).

negotiating a vague commercial term and then, years later, asking this Commission to approve a charge under that term that would significantly decrease a project's revenue does not strike the Commission as good faith negotiation. Accordingly, the Commission disapproves DESC's request to impose a VIC on projects already party to PPAs with DESC.

If the Commission were to appropriate to allow the imposition of a retrospective VIC, however, the Commission would consider it an appropriate balance of the interests in this proceeding to apply the charge proposed by SCSBA Witness Burgess of $0.96/MWh for the approximately 700 MW of solar facilities with existing VIC language. This $0.96/MWh VIC would be fixed for the duration of the PPA.

The Commission further notes that unlike the integration charge included in the Partial Settlement in Duke Energy's avoided cost proceeding, which expressly stated that the agreed-upon integration charge could not be imposed if the solar facility was able to operate in a way that would mitigate the need for the charge, DESC has not provided or agreed to permit solar facilities to mitigate any integration charge. The absence of the opportunity to mitigate, particularly given the retroactive nature of the charge, further weighs against the retroactive application of the charge to existing contracts. If the Commission chose to adopt the $0.96/MWh VIC described above (or any other amount), the imposition of that charge on any solar facility shall be tolled until DESC has proposed mitigation measures with the Commission – similar to those that Duke Energy will file with the Commission – until intervenors have had the opportunity to comment on the proposed measures, and until the Commission has approved such mitigation measures. DESC shall file such proposed measures within 30 days of the date of this Order.

<u>Embedded Integration Charge (Prospective Integration Charge)</u>

With respect to the EIC, the Commission finds persuasive the evidence presented by CCL/SACE Witness Stenclik, SCSBA Witness Burgess, and ORS Witness Horii that DESC's methodology used to derive the EIC is fundamentally flawed and that its results should not be relied upon to calculate an EIC that would apply to prospective PPAs. The Commission finds that DESC's analysis quantifying the EIC was based on the changes in solar generation from one time interval to another, rather than on differences between forecast and actual solar generation for the same interval. Since the purpose of reserves is to address unexpected changes in supply and demand, DESC's analysis is not relevant. DESC's proposed 35% of nameplate capacity for the avoided cost calculations also fails to reasonably balance between costs and risks, and DESC inappropriately maintained high reserve levels even when solar generation was modeled to be low, thereby over-estimating the cost of maintaining additional reserves during hours when there is little or no solar generation.

Based on the substantial flaws in DESC's methodology, the Commission concludes that DESC has not sufficiently supported the EIC it has proposed to include in its avoided energy rates. However, balancing the evidence in the record and the interests represented by the parties to this proceeding, the Commission concludes that it is appropriate to adopt the \$0.96/MWh EIC presented by SCSBA Witness Burgess. This charge shall apply to PPAs signed between the date of this Order and the approval of DESC's updated avoided cost rates in the next such proceeding. This \$0.96/MWh EIC will be fixed for the duration of any PPA. Further, the imposition of such rate shall be tolled until the Commission has approved integration charge mitigation measures, as described above.

Finally, the Commission finds it appropriate and necessary to conduct the independent third-party integration study contemplated by Act 62 in order to determine what, if any, integration charges may be imposed on QFs on a prospective basis in subsequent avoided cost proceedings. To this end, within 90 days of the date of this Order, the Commission will open a docket pursuant to S.C. Code Ann. § 58-37-60 in which to initiate an independent study to evaluate the integration of renewable energy and emerging energy technologies into the electric grid for the public interest.

C. Avoided Cost Calculations and Methodologies

DESC asks the Commission to approve its application of the DRR methodology its avoided cost rates, including rates for energy and capacity.[98]

1.Avoided Cost and the "Zone of Reasonableness"

In his direct testimony, SCSBA Witness Burgess argues that the concept of a "zone of reasonableness" is relevant to this Commission's consideration of utility avoided cost determinations. This "zone of reasonableness" concept is essentially a sensitivity analysis that logically follows from the fact that some level of uncertainty is inherent and unavoidable in the models and forward-looking price projections used to calculate avoided cost.[99] Therefore, a range of inputs, assumptions, and methodologies could be found to be reasonable when calculating avoided cost. This is plainly evident by the fact that DESC and Duke Energy use two different Commission approved methodologies, the differential revenue requirement and peaker methods, to calculate avoided cost.

DESC Witness Neely characterizes the "zone of reasonableness" concept as an attempt by SCSBA to artificially raise avoided cost rates.[100] However, Mr. Burgess stresses that the "zone of reasonableness" is a description of the *de facto* reality that avoided cost calculations are naturally uncertain because they rely on a variety of modeling projections and subjective decisions that

[98] Joint Application at 2.
[99] Surrebuttal of Edward Burgess at 2.
[100] Rebuttal Testimony of Jim Neely at 18.

directly affect the outcome of any avoided cost calculation.[101] Therefore, the "zone of reasonableness" standard recognizes the bounds of uncertainty in the avoided cost rate calculations being considered by this Commission.[102]

This Commission agrees that avoided cost calculations are necessarily uncertain and that reasonable inputs should be used. This Commission also agrees that this uncertainty creates a "zone of reasonableness" whereby competing alternatives for particular inputs could each be deemed reasonable, and that Act 62's stated intent to encourage the development of renewable energy should influence the final decision from this Commission as to what inputs will be required for the calculation of avoided cost.

2.The Transparency of DESC's Avoided Cost Filings

Act 62 requires that the utilities' "avoided cost filing must be reasonably transparent so that underlying assumptions, data, and results can be independently reviewed and verified by the parties and the commission."

SCSBA Witness Burgess raises concerns in his testimony about the transparency of the information DESC provided in support of its avoided cost calculations, both with its initial filings and in response to discovery requests. He testified that "there are several aspects of DESC's avoided cost calculations and methodologies that are obscure and unexplained, both in Dominion's initial cost filings and in discovery responses." These include (but are not limited to) the rationale for selection of peak hours and peak seasons as well as hourly avoided cost data and marginal cost data for the base and change case in DRR analysis.[103] Mr. Burgess testified that these gaps in information could conceal additional problems with DESC's methodologies, in addition to those

[101] Surrebuttal Testimony of Edward Burgess at 4.
[102] *Id.*
[103] SBA Burgess Direct, p.21, lines 4-14.

specifically raised in Mr. Burgess's testimony. DESC also refused SBA's requests to conduct additional modeling runs with alternative inputs so that the impact of DESC's assumptions could be understood.

DESC Witness Neely disagrees with this characterization, stating that Mr. Burgess had provided an accurate description of the company's application of the DRR methodology in his testimony, and that DESC had responded to SBA's discovery requests.[104]

On Surrebuttal, Mr. Burgess points out that having a high-level understanding of DESC's calculation methodology is not the same as having enough information to independently review the underlying assumptions, data, and results, as the statute requires. Mr. Burgess points out "many instances in which Dominion did not provide access to adequate data and modeling details to verify the reasonableness of specific methodological choices or inputs and assumptions used by DESC, or its subsequent findings," and clarified that although DESC had responded to SBA's discovery requests, in some instances (e.g. a request for hourly avoided cost data) the company simply responded that it did not have that information.[105] Finally, Mr. Burgess noted that much of DESC's analysis on integration costs was not provided with the company's initial filings, but was produced in amended testimony produced only one business day before Intervenors' direct testimony was due.[106]

Power Advisory echoed many of SBA's concerns regarding transparency, noting that it took two sets of interrogatories from Intervenors before DESC provided basic information about the format or data structure of its avoided cost models, which consumed valuable time in an already compressed procedural schedule.

---

[104] Neely Rebuttal, p.21, lines 4-10.
[105] See e.g. Hearing Ex. 11 (Late-filed).
[106] Burgess Surrebuttal at 4-5.

Furthermore, though basic avoided cost data were provided, DESC has yet to produce data sufficient to comprehend "the drivers of the avoided cost patterns" identified by Power Advisory. Ultimately Power Advisory concluded that DESC's avoided cost filings were not reasonably transparent, as required by the statute.[107]

The Commission is persuaded by the testimony of SBA and the assessment of Power Advisory that DESC failed to meet Act 62's requirements that its avoided cost filings be reasonably transparent. Witness Neely's claim that because SBA Witness Burgess accurately describes DESC's avoided cost calculation methodology in a single paragraph of his testimony, the Company has met its transparency obligations, indicates that the company either does not grasp or does not take seriously its transparency obligations under Act 62. The question in determining whether an electric utility has lived up to this requirement is not whether another party can comprehend, at a high level of abstraction, what the company has done. It is whether "underlying assumptions, data, and results can be independently reviewed and verified by the parties and the commission." S.C. Code Ann. § 58-41-20(J). As evidenced by the many gaps in data and information identified by SBA and Power Advisory, that test has not been met.

The Commission is especially troubled by DESC's failure to produce critical information concerning its calculation of integration costs (which resulted in a substantial change in the proposed rates) until well after it made its initial filings in this docket. That information was produced only <u>one business day</u> before Intervenors' direct testimony was due. Needless to say, Intervenors did not have a fair opportunity to review that filing in time to inform their direct testimony, much less conduct discovery, which Act 62 guarantees them the right to do. Given the

[107] Power Advisory Report at 35-36.

highly expedited timelines required by Act 62, the company's conduct was highly prejudicial to other parties. Given the express transparency requirements of Act 62, it was inexcusable.

DESC's counsel argued at the hearing (during Commissioner questioning of SBA Witness Burgess) that the lack of any pending motion to compel was a clear indication that the Company had met its transparency obligations.[108] The Commission disagrees. All parties to this docket operated under significant time constraints to evaluate large volumes of complicated information, and to formulate reasoned responses to the other parties' filings. Especially where large volumes of data and technical information are involved, it may not be clear that there are gaps in information provided by the utilities until responses to discovery requests are received. Propounding follow-up discovery requests and waiting for responses takes additional time. More importantly, in any contested case – to say nothing of swiftly-moving litigation where dozens of complicated issues are in play – it may not be a prudent use of parties' limited resources to litigate motions to compel, especially when those motions might not be resolved until after testimony is due. Nor does the Commission want to encourage parties in future proceedings to file unnecessary motions to compel, lest they be faulted for not doing so. The Commission would vastly prefer that parties try to resolve disputes about discovery informally (which itself may be time-consuming process, especially when the parties are trying to be reasonable in terms of the deadlines imposed on other parties). In light of these factors, and in light of the transparency requirements of Act 62, the Commission believes it would be unreasonable to conclude that, if an Intervenor identifies gaps in information provided the utilities (especially in discovery), it must file a motion to compel or waive any right to complain about those gaps.

[108] Vol. 2 at 573:6-574:20.

Having concluded that DESC failed to meet the transparency requirements of the statute, the Commission must decide what the appropriate remedy is. The General Assembly did not specify the consequences for failing to meet this requirement, but it would be unreasonable to assume that this language was merely aspirational.

As discussed below, the Company's lack of transparency in its avoided cost filings is one factor – though certainly not the only one – in contributing to the Commission's disapproval of the Company's proposed rates. But the Commission does not think it would be in the interest of the ratepayer, the Company, or any potential intervenors for the same concerns about transparency to come up again in the next biennial avoided cost proceeding. Accordingly, the Commission will order, as it has for Duke, that prior to the opening of the next proceeding to consider DESC's avoided costs rates, calculations, and methodologies conducted under S.C. Code Ann. § 58-41-20, the Commission will solicit proposals from all interested parties on recommendations related to improved transparency, consistent with the requirements of Act 62.

In addition, because DESC in particular appears to have had difficulty with transparency, the Commission clarifies that in DESC's next biennial avoided cost proceeding, the Commission will again retain, as authorized by S.C. Code Ann. § 58-40-21(I), an independent third-party consultant to evaluate the avoided cost rates, methodologies, terms, calculations, and conditions proposed by DESC.[109] It is the Commission's expectation that this will assist DESC in focusing on its continuing transparency obligations under Act 62.

3.Avoided Energy Costs

[109] It is not clear whether, under S.C. Code Ann. § 58-41-20(I), the Commission is required to retain a third-party consultant for every biennial avoided cost proceeding, and the Commission does not decide that issue now. Rather, the Commission seeks here to clarify that, required or not, it will require retention of a consultant for DESC.

a. DESC Testimony

DESC uses a Difference in Revenue Requirements ("DRR") methodology to calculate both the energy component and capacity component of its avoided costs. This approach involves calculating the revenue requirements between a base case and a change case. The base case is defined by DESC's existing and future fleet of generators and the hourly load profile to be served by these generators, as well as the solar facilities with which DESC has executed a power purchase agreement. The change case is the same as the base case except that a zero-cost purchase transaction modeled after the appropriate 100 MW energy profile is assumed. The long-run avoided costs are calculated from 2020 to 2029 and are divided into two groups of five years: 2020-2024 and 2025-2029.[110]

DESC provided separate avoided cost calculations for a solar QF and a non-solar QF. The solar estimate was developed using a solar profile to reflect an hourly production shape from a 100 MW solar facility, whereas the non-solar estimate was developed using a 'flat' 100 MW 24 x 7 block of incremental energy. As discussed, the solar avoided cost calculations included an Embedded Integration Charge in that they were modeled with additional reserves equal to 35% of the installed solar capacity during solar generating hours.[111] For the years 2020-2024, the avoided energy rate for solar QFs ($16.76/MWh) is approximately 54% of the rate for non-solar QFs ($30.93/MWh); for 2025-2029, the proposed solar rate ($15.66/MWh) is about 43% of the non-solar rate ($36.46/MWh). The Commission notes with some dismay that DESC's final rate proposal was produced in a late-filed amended exhibit, only one business day before Intervenors were to file their direct testimony.

[110] DESC Neely Direct, p. 7.
[111] DESC Neely Direct, p. 10.

b. SBA Testimony

SBA Witness Ed Burgess testifies to having concerns about several aspects of DESC's avoided energy cost calculations. First, he criticizes DESC's decision to calculate separate solar-specific avoided energy rates. Mr. Burgess testifies to the importance of a technology-neutral approach to setting avoided cost rates, particularly in recognition of the rapidly changing technological capabilities of QF resources. A technology-specific energy rate like the one proposed by DESC raises a substantial risk that the rate will not accurately represent the actual performance and output of the generating facilities subject to that rate. Given that there are virtually limitless potential configurations of solar, or solar plus storage, Mr. Burgess testifies that it does not make sense to develop a separate avoided cost rate for each of these possibilities.[112]

Mr. Burgess recommends that instead of establishing solar-specific avoided cost rates, it would be more reasonable to quantify the value of delivering energy to DESC's system at different times and develop a set of rates that is agnostic to the underlying technology. This would mirror the approach taken by other utilities, including Duke Energy Progress and Duke Energy Carolinas, and would be especially well-suited for solar plus storage due to the fact that storage can be dispatched at any time and is thus closer in nature to a non-solar QF that can also dispatch at any time.[113]

Mr. Burgess also provides a more detailed analysis and critique of DESC's proposed avoided energy rates. As discussed previously, Mr. Burgess states that his ability to understand and critique DESC's calculations was undermined by a general lack of transparency and lack of data in DESC's modeling of avoided costs. According to Mr. Burgess, DESC's initial responses

[112] Hearing Vol. 2 at 523.19-523.21 (Burgess Direct).
[113] *Id.*

to SBA's discovery requests yielded responses that were opaque, incomplete, or lacking any meaningful explanations or labels, requiring follow-up discovery requests and making it more difficult to conduct an analysis in a timely fashion.[114] In the case of DESC's integration cost analysis, SBA received critical data and information (including a completely revised rate proposal) only one business day before SBA's direct testimony was due.

Notwithstanding this lack of transparency, Mr. Burgess identifies several specific problems with DESC's avoided energy calculation methodology.[115] First, he questions DESC's rationale for the selection of its four pricing periods, which was not explained and which DESC could not produce data to substantiate.[116] Selection of pricing periods has the potential to skew results for QFs with specific output profiles, due to averaging of hourly costs for periods in which marginal system cost is relatively high with periods when system cost is low. In other words, it is very easy to select pricing periods that discriminate against solar facilities which put power on the grid at specific times. The fact that DESC's calculated energy rates are higher during winter "Off Peak Season" months than they are during summer "Peak Season" months when system demand is higher and solar resources are more abundant – an extremely counterintuitive result – strongly suggests that the pricing periods are biased against solar.[117]

DESC's approach contrasts with Duke's proposed nine pricing periods (and SBA's proposed 11 for Duke), which provides a more granular approach. Mr. Burgess testifies that DESC could not provide the necessary hourly cost data that would enable SBA to determine whether the

---

[114] *Id.* at 523.22.
[115] *Id.* at 523.23.
[116] *Id.* at 523.25, 523.27.
[117] *Id.* at 523.25, 523.27-28.

DESC's proposed pricing periods appropriately captured the avoided energy cost of solar output, nor enable SCSBA to suggest alternatives.

Second, Mr. Burgess questions DESC's proposal to establish an energy rate for solar QFs with energy storage that is identical to the technology-specific rate for solar QFs without storage. According to Mr. Burgess, this incorrectly discounts the ability for storage to increase a QF's energy value through optimal dispatch.[118] On surrebuttal, Mr. Burgess notes that DESC's rebuttal testimony does not dispute his position regarding treatment of storage resources.[119]

Third, as discussed previously, Mr. Burgess takes exception to DESC's inclusion in its energy rates of integration costs that have not been reliably quantified.[120]

Finally, Mr. Burgess identifies several other modeling deficiencies that could negatively impact avoided cost calculations:

- Failure to consider energy imports and exports on its system (at least for avoided energy rates);
- Reliance on a resource plan with outdated and inflated cost assumptions for solar systems and battery storage systems; and
- Failure to consider environmental costs of managing coal ash.[121]

Mr. Burgess recommends that the most reasonable approach for the Commission to take to address the many methodological flaws of DESC's rate calculation would be to direct DESC to address these flaws and recalculate its rates. In Mr. Burgess's experience this is the approach usually taken by other state utilities commissions in similar situations.

---

[118] *Id.* at 523.30-35
[119] Hearing Vol. 2 at 527.8 (Burgess Surrebuttal).
[120] *Id.* at 523.29
[121] *Id.* at 523.34-37.

Mr. Burgess also proposes an alternative set of technology-neutral energy rates for Commission approval until the methodological flaws of DESC's rate calculations can be addressed. These rates are based on (1) where possible, a quantification of the impacts of DESC's methodological flaws, and (2) where quantification is not possible, a reasonable estimate of the impact based on Mr. Burgess's experience and expertise.[122] Mr. Burgess proposes rates that were levelized across the entire ten-year period of the contract rather than divided into two five-year blocks, because it would be advantageous to QFs, while leaving the company indifferent.[123] DESC concedes that this approach is "not unreasonable" and does not have any impact on avoided cost.[124]

SBA's proposed rates, which as stated here do not include an integration cost, are as follows:

<table>
<tr><th></th><th>DESC Proposed</th><th>SBA Proposed</th></tr>
<tr><td>Rate PR-Standard Offer Avoided Energy Rate for Solar QF 2020-2024 ($/MWh)</td><td>$16.76/MWh</td><td rowspan="2">Peak Season Peak: $31.05/MWh
Peak Season Off-Peak: $27.51/MWh
Off-Peak Season Peak: $32.52/MWh
Off-Peak Season Off-Peak: $28.93/MWh</td></tr>
<tr><td>Rate PR-Standard Offer Avoided Energy Rate for Solar QF 2025-2029 ($/MWh)</td><td>$15.66/MWh</td></tr>
<tr><td>Integration costs</td><td>Embedded in energy rate</td><td>$0.96/MWh (subtracted from energy rate)</td></tr>
</table>

c. ORS Testimony

ORS Witness Horii concludes that it is reasonable for DESC to use the DRR method to calculate avoided energy rates, but concludes that the inputs and assumptions that DESC employed in developing their avoided energy cost estimates are not reasonable.[125] Mr. Horii's critique of

[122] Vol. 2 at 527.15 (Burgess Surrebuttal); Hearing Ex. 10.
[123] Vol. 2 at 523.38 (Burgess Direct), 527.9 (Burgess Surrebuttal)
[124] Vol. 1 at 319.25 (Neely Rebuttal).
[125] Vol. 2 at 695.22 (Horii Direct).

DESC's avoided energy calculations focuses on its inclusion of integration costs, which in Mr. Horii's view were not reasonably estimated.[126] He does not address other issues related to DESC's calculation of avoided energy costs and proposes that the Commission adopt DESC's proposed energy rates with an alternative integration charge.

d. Consultant's Evaluation of DESC's Avoided Energy Rates and Calculations

Power Advisory's general conclusion with regard to DESC's proposed avoided energy rates is that they are simply not reliable.

As discussed above, Power Advisory concludes that DESC's proposal to embed integration costs in its avoided energy cost calculations is deficient, for several reasons.[127] Power Advisory also questions whether the modeling actually performed by DESC in support of its calculations (and provided in discovery responses) even reflects DESC's stated approach to integration charges in avoided energy rates (i.e. adding operating reserves equal to 35% of nameplate capacity during solar generating hours). Power Advisory notes that certain model runs provided by DESC show very high over-night costs associated with 100 MW of incremental solar capacity, a time when there would be no solar output, which is counterintuitive and not explained by the utility.[128] In other words, DESC is modeling significant solar integration charges at times when solar is not even generating. Power Advisory recommends that the Commission undertake an independent renewables integration study, as authorized by Act 62.[129] In the absence of an appropriate quantification of integration costs, Power Advisory recommends that the Commission use ORS

[126] *Id.* at 695.29.
[127] Power Advisory Report at 22-25.
[128] Power Advisory Report at 31-32.
[129] *Id.* at 39.

Witness Horii's estimate of integration costs ($2.29/MWh) for purposes of calculating avoided energy costs.

With regard to other issues related to avoided energy costs, Power Advisory agrees with SBA Witness Burgess that a technology-neutral approach to avoided cost rates would be more flexible than the company's technology-specific approach and would reflect the actual value for customers of QF power in specific hours. The consultant agrees that DESC's technology-specific approach is potentially discriminatory towards solar QFs and concludes that Mr. Burgess's proposed approach is reasonable.[130]

Power Advisory agrees with SBA Witness Burgess that pricing periods should be chosen to reflect discernable pricing patterns and underlying differences in avoided costs throughout the day, and that the use of broad pricing periods increases the risk of inaccurate avoided costs. The consultant did not draw any other conclusions with regard to DESC's pricing periods, but recommended that DESC provide support for the pricing periods that it employs in its next avoided cost filing.[131]

More generally, Power Advisory notes that modeling results provided by DESC "appear to demonstrate an extreme level of modeling uncertainty around the estimated solar avoided costs," calling into question the overall reliability of DESC's modeling of avoided costs.[132] A wide variability in the results of modeling runs given similar assumptions, which cannot be explained with the data provided by DESC, raises similar concerns. Power Advisory noted that non-solar modeling did not exhibit similar issues.[133] Power Advisory echoed SBA Witness Burgess's

[130] Power Advisory Report at 37-38.
[131] *Id.* at 38.
[132] *Id.* at 33.
[133] *Id.* at 34-35.

concern that the lack of transparency in DESC's filings was such that it could conceal more specific problems with DESC's calculations.[134] Ultimately, Power Advisory appeared to conclude that DESC's avoided energy calculations are simply "not reliable."[135]

e. The Commission's Conclusions Regarding Avoided Energy Costs

The Commission is persuaded by the testimony of SBA Witness Burgess and the recommendations of Power Advisory, and concludes that the avoided energy calculations for solar QFs proposed by DESC in this case are simply unreliable and do not fully and accurately represent the avoided energy cost of solar QFs. The counterintuitive and inconsistent modeling results noted by Power Advisory, as well as the counterintuitive pricing results noted by SBA (i.e. higher avoided energy costs during winter off-peak periods than during summer on-peak periods) suggest problems with the company's calculations, which cannot be explained given the limited data and information provided by the company. And of course, as discussed previously, DESC's approach to calculating integration costs for purposes of inclusion in avoided energy costs is unreasonable and inconsistent with actual system operations. Finally, the Commission cannot help but note that DESC's proposed avoided energy rates are so far below the previous PR-2 rates (which were approved 18 months ago) and the rates proposed by DEC and DEP in their Act 62 dockets as to suggest something may be amiss in the company's approach.

Given these serious concerns about DESC's calculations, the Commission cannot accept ORS's proposal simply to approve DESC's proposed rate with an alternative calculation of integration costs. (The Commission notes that ORS Witness Horii's analysis of DESC's avoided energy rates focused exclusively on the embedded integration charge and did not address the other

[134] *Id.* at 39.
[135] *Id.* at 39.

issues identified by SBA or by Power Advisory.[136]) Instead, the Commission will approve SBA Witness Burgess's avoided energy rate proposal, which in the Commission's view is a more reasonable alternative. The Commission is persuaded by SBA's arguments and Power Advisory's recommendations that a technology-neutral avoided cost rate is preferable to a solar-specific rate, given the variability among project capabilities and output profiles, especially when energy storage technologies are factored in. DESC Witness Bell acknowledged at the hearing that "there are so many different variations" of solar plus storage facilities "that you could never cover it with a single specification."[137] SBA's proposed rate is technology-neutral and does not advantage or disadvantage solar QFs in relation to other forms of generation. Its flexibility also makes it more appropriate to capture the ratepayer benefits of new technologies such as energy storage, which when coupled with solar allow QFs to put energy on the system at times when it is more valuable to the utility and to ratepayers.

Nor can the Commission approve DESC's proposed methodology for calculating avoided costs for projects not eligible for the Standard Offer. Unfortunately, the unreliability and opacity of DESC's calculation of avoided energy costs for solar limit the range of potential remedies available to this Commission. As with the Standard Offer, the Commission cannot accept ORS's recommendation that the Commission approve DESC's energy cost calculation with a slightly improved integration charge. As an interim approach until the next biennial proceeding, the Commission will instead require that DESC calculate negotiated rates for solar QFs larger than 2

[136] ORS Witness Horii did note, in his discussion of embedded integration costs, that "there appears [sic] to be fundamental flaws in the calculation method used by DESC" for avoided energy costs, causing him "to question the validity and accuracy of DESC's method and model for the impact of the operating reserve levels on operating costs." Vol. 2 at 695.29-30 (Horii Direct). This is the model used by DESC to calculate its avoided cost values, and corroborates Power Advisory's conclusion that DESC's calculation methodology is simply unreliable.
[137] Hearing Vol. 1 at 228:4-14 (Bell Cross).

MW using the same methodology proposed for calculating avoided energy costs for non-solar QFs. As described by DESC Witness Neely, for non-solar QFs the Company applies the DRR method and uses a "change case" for non-solar QFs which is "derived from the base case by subtracting a 100 MW round-the clock power purchase profile."[138] For solar QFs, the change case is derived from the base case "by subtracting a 100 MW power purchase modeled after a solar profile and increasing operating reserves" as described previously.[139] Because it would benefit QFs and not impact ratepayers, the Commission also agrees with Mr. Burgess's recommendation that rates be levelized over the entire 10-year period of the contract, rather than in five-year blocks as currently proposed.

The Commission concludes that it is reasonable to require the Company to follow this approach for calculating avoided energy costs for all QFs over 2 MW (solar and non-solar) for a few reasons. First, it is technology-neutral, which for the reasons discussed above is preferable to a technology-specific rate. Second, it resolves concerns raised by Witness Burgess and Power Advisory about selection of time periods and other modeling choices that may discriminate against solar. Finally, Power Advisory notes that the results of DESC's modeling of non-solar avoided energy costs do not suffer from the extreme level of modeling uncertainty that afflicts their solar modeling, as noted by Power Advisory.[140] And although this fact is not dispositive, the Commission notes that the Standard Offer rates for non-solar QFs derived using this methodology are close in value to the Standard Offer solar rates proposed by SBA Witness Burgess, which the Commission finds reasonable.

[138] Vol. 1 at 308.11 (Neely Direct).
[139] *Id.*; Power Advisory Report at 29.
[140] Power Advisory Report at 33-34.

The Commission also notes that DESC has committed, under a November 2018 settlement agreement with SBA, to file for Commission approval in calendar year 2019 proposed avoided cost rates for energy and capacity that provide accurate pricing for storage as a separate resource, or proposed technology-neutral avoided cost rates for energy and capacity that provide accurate pricing for dispatchable renewable generating facility such as solar plus storage. The technology-neutral rates the Commission herein approves meet those requirements, meaning that DESC can fulfill its obligations under this section of the Settlement Agreement in this docket, obviating the need for DESC to file (and the Commission to review) an additional rate filing in 2019. This is a far more efficient use of judicial resources than conducting yet another avoided cost proceeding at the turn of the year, as DESC proposes to do.[141]

As discussed above, the Commission also approves a prospective integration cost of \$0.96/MWh, to be included in the calculation of avoided energy costs for solar projects that contract under the avoided cost rates and methodologies approved in this proceeding. However, as discussed above, the Commission will also require DESC to propose, for comment and Commission approval, reasonable technical standards by which a solar (or solar plus storage) QF can avoid imposition of this integration charge. QFs that meet those standards will be entitled to the full avoided energy rate, without the \$0.96/MWh reduction for integration costs.

4. Avoided Capacity Costs

a. DESC Testimony

[141] DESC Witness Neely acknowledged on cross-examination that it would have been more efficient for the company to propose a technology-neutral or solar plus storage rate in this docket, but that it declined to do so because Mr. Neely, who would be responsible for developing the rate, "[doesn't] have the time to do that right now." Vol. 1 at 340:3-20, 342:9-14.

DESC's proposed avoided capacity rates provide no capacity payment to solar QFs. DESC Witness Lynch testifies that solar generation does not provide any capacity value for its system, because its capacity needs are driven by winter peaks and solar does not provide any energy during these critical peak periods. This conclusion is based in part on a "Solar Capacity Benefit Study" presented as an exhibit to the testimony of DESC Witness Lynch.[142] Dr. Lynch testifies that as the amount of solar capacity on DESC's system increases, each increment of solar capacity affects the system peak on fewer days. Additional solar effectively shifts the time of the system peak net of the solar output is shifted later and later in the day until it reaches the time of sunset, about 8 p.m.[143]

Dr. Lynch testifies that he performed an ELCC (Effective Load Carrying Capacity) analysis for DESC's system that indicates that solar has a capacity value of approximately 24%, but claims that ELCC is not an appropriate methodology for calculating the capacity contribution of solar on DESC's system because it is a winter-peaking system.[144]

On Rebuttal, Dr. Lynch disagrees with ORS Witness Horii's characterization of DESC's methodology as "overly simplistic and deterministic," pointing to three analyses conducted by the Company that, he argues, "provide[] clear and irrefutable evidence that solar has a zero-capacity value on DESC's system."[145]

Dr. Lynch rejects SBA Witness Burgess's suggestion that capacity value should be allocated seasonally, stating that DESC has concluded that it will not allocate capacity because "its winter peak forecast is higher than its summer peak forecast and that its winter peak can experience

---

[142] Vol. 1 at 276.3 (Lynch Direct).
[143] *Id.* at 276.6.
[144] *Id.* at 276.11.
[145] Vol. 1 at 283.2-283.3 (Lynch Rebuttal).

spikes causing the need for a 21% winter reserve margin," and reiterating the Company's conclusion "that incremental resources must help serve winter demands in order to have capacity value."[146]

b. SBA Testimony

SBA Witness Burgess testifies that DESC is incorrect to ascribe zero capacity value to solar, and agreed with ORS Witness Horii's opinion "the assumptions used by the Company to calculate avoided capacity for solar projects are overly simplistic and deterministic" and that there are other methods that could be used to calculate a more reasonable estimate of solar capacity value.[147]

Mr. Burgess cites several reasons for this conclusion. First, six of Dominion's last ten annual peaks occurred in summer when solar is plentiful,[148] and Mr. Burgess presents an analysis concluding that more than 50% of the top 10 peak load hours for DESC (net of contracted solar) in each of the next ten years fall within summer months.[149] Accordingly, whether DESC is described as a summer peaking or a winter peaking utility, it must still plan for both summer and winter peaks.[150] Moreover, even during Dominion's highest winter peak in recent years (which occurred on cold winter mornings), solar facilities would have had a small capacity contribution because they would have been generating during some of those peak hours.[151] Finally, Mr. Burgess testifies that DESC's own analysis shows a meaningful, non-zero value for solar using the ELCC methodology, which is the industry standard for measuring capacity value.[152]

---

[146] *Id.* at 283.6.
[147] Vol. 2 at 527.11 (Burgess Surrebuttal).
[148] *Id.*
[149] *Id.*; Vol. 2 at 523.47-52 (Burgess Direct).
[150] *Id.* at 527.11-12.
[151] *Id.* at 527.11.
[152] *Id.* at 523.52-58.

Mr. Burgess also notes that Dominion's evaluation of capacity value unreasonably relied on a completely different resource plan than what was used to evaluate energy rates.[153] Finally, Mr. Burgess testifies that the assumed capital costs for avoided units selected by Dominion were too low.[154]

Mr. Burgess presents two alternative approaches for calculating the avoided capacity rates to correct for some of the deficiencies described above. The first is a solar-specific avoided capacity rate based on an assigned capacity value of 24% based on the average capacity contribution of 1,000 MW of solar, as calculated by DESC under the ELCC approach.[155] (Adjustments are also made to capacity costs to account for the other issues identified by Mr. Burgess.) This results in an avoided capacity cost in terms of $/kW-year, where the denominator represents the nameplate capacity of the solar installed (i.e. 100 MW). Under this option, solar QFs would be provided an equivalent avoided capacity cost payment on a monthly or annual basis. Technology-specific rates are provided both for solar QFs without storage, and solar QFs with storage.[156]

Mr. Burgess also proposes an avoided capacity rate that is technology-neutral, consistent with SBA's proposed avoided energy rate. To calculated this technology-neutral rate, Mr. Burgess used the DRR method used by DESC (with updated capacity costs as described above), but applied different seasonal weightings for the summer and winter periods. To determine the revised seasonal weightings, Mr. Burgess calculated the seasonal weightings by examining the expected distribution of the net load during each hour of the year over the next decade, then determined the

---

[153] Vol. 2 at 523.46.
[154] Vol. 2 at 523.41-46.
[155] Vol. 2 at 523.59-60.
[156] Vol. 2 at 523.59, 527.15; Hearing Ex. 10.

distribution of net load hours within the top 5% (i.e. 95% percentile) during each year. Based on the prevalence of these peak net load hours he assigned a winter peak load period of 6-9 a.m. during the months of Dec-Feb (equivalent to DESC's approach) as well as a summer peak load period of 2-7 p.m. He then determined the seasonal weightings for each year based on the number of peak net load hours within each period and then took the average over all 10 years. The resulting share of summer and winter values within the peak load periods was 25.23% for winter mornings and 74.77% for summer afternoons.[157]

A summary of SBA's rate proposals is as follows:

Avoided Capacity: Standard Offer Non-Solar/Technology-Neutral QF* *SBA recommends a single, technology-neutral standard offer rate.	Summer: $78.23/MWh (June-Sept, 2-7pm) Winter: $64.59/MWh (Dec-Feb, 6-9am)
Avoided Capacity: Standard Offer Solar QF's,* *All hours* *Applicable only if technology-neutral option is not offered	$24.00/kW
Avoided Capacity: Solar with Storage *Applicable only if technology-neutral option is not offered	$24.00-$45.39/kW (depending on size and duration of storage)

c. ORS Testimony

ORS witness Horii disagrees with DESC's conclusion that solar has no capacity value on its system. He maintains that DESC's analysis on this issue is "simplistic and not probabilistic," and states that the ELCC approach is the industry standard and more appropriately reflects capacity value of solar.[158] ELCC, he says, recognizes there is a value from solar capacity at times other than before sunrise. The need for capacity arises not just from when the system peak occurs (which may be before sunrise, while solar is not generating), but also on the risk of generation or

[157] *Id.* at 523.59-60.
[158] Vol. 2 at 710:6-18 (Horii Cross).

transmission outages, which can occur at other times of the day, therefore resulting in values for capacity at other times of the day.[159] Based on the ELCC methodology, Mr. Horii suggests that solar should receive a capacity benefit of 11.8% of its nameplate capacity.[160]

ORS also takes issue with DESC's use of distinct "base" and "peaking" reserve margins for purpose of avoided cost modeling, which is inconsistent with the resource plan in DESC's IRP. Mr. Horii testified that this would significantly impact avoided capacity costs both by altering the timing of DESC's capacity needs, and also by reducing the cost of the avoided resource.[161] Mr. Horii testifies DESC understates capacity cost by choosing to model a 100 MW solar "change case," but only a 93 MW peaking resource as the avoided unit.[162]

Finally, Mr. Horii critiques DESC's assumption of a 60-year economic life for combustion turbines, noting that this would have been appropriate only if the company had included in its capacity costs the major overhaul costs that would be necessary to extend the economic life of a CT unit to 60 years (which it did not).[163]

ORS proposes the following capacity rates as a more reasonable alternative to DESC's zero capacity value:[164]

	DESC Proposed	**ORS Recommended**
Standard Offer Solar QFs *All hours*	\$0.00	\$3.79/MWh
Solar with Storage	\$3.17/kW per year	\$7.08/kW per year

d. Consultant's Evaluation of DESC's Avoided Capacity Rates and Calculations

159 *Id.* at 697.10 (Horii Surrebuttal)
160 *Id.* at 695.37 (Horii Direct)
161 *Id.* at 695.40-41.
162 *Id.* at 695.39.
163 *Id.* at 695.39; *id.* at 697.10 (Horii Surrebuttal).
164 Vol. 2 at 695.41 (Horii Direct).

Power Advisory concludes that DESC's avoided capacity calculations understate avoided capacity costs, for several reasons.

First, Power Advisory agrees with ORS and SBA Witness Burgess that capacity value should be estimated using the industry-standard ELCC methodology, which reflects (unlike DESC's methodology) the fact that reliability is a function of both supply and demand factors.[165]

Power Advisory also agrees with ORS Witness Horii that it is unreasonable for DESC to use distinct "base" and "peaking" reserve margins for purpose of avoided cost modeling, concluding that capacity requirements are not typically bifurcated as base and short-term as has been done by DESC.[166] Power Advisory also agrees with ORS's critiques concerning the choice to use a 100 MW change case but only a 93 MW avoided unit, and DESC's use of a 60-year economic life for a CT.[167]

e. The Commission's Conclusions Regarding Avoided Capacity Costs

The Commission is persuaded by the testimony of ORS and SBA's witnesses and by the recommendations of Power Advisory that DESC is incorrect to assign a zero capacity value to solar. DESC's approach to this issue, as described by ORS Witness Horii, is simplistic and does not represent current industry standards. By contrast, the ELCC analysis that is endorsed by SBA, ORS, and Power Advisory (and which Dr. Lynch actually performed) *is* the industry standard for estimating the capacity contribution of generating resources, and in the Commission's opinion would have been a more appropriate way for DESC to determine the capacity value of solar QFs.

The Commission also finds persuasive the testimony of SBA Witness Burgess that a technology-neutral approach to avoided capacity rates is preferable to a technology-specific

165 Power Advisory Report at 42.
166 *Id.* at 43-44.
167 *Id.* at 44-46.

approach, for largely the same reasons it is appropriate for energy rates – principally, the flexibility of the rate to accommodate changing technologies such as energy storage and the treatment of solar and non-solar QFs on a fair and equal footing. It also logical that a solar QF that has the ability to provide capacity at a time the system demands it should be paid the same rate for that capacity as a non-solar QF. Mr. Burgess's proposed capacity rates are based on the capacity rates calculated by DESC for non-solar QFs, with the addition of a summer peak period and adjustments to the cost of the avoided unit as suggested by Mr. Burgess. The Commission concludes that SBA's proposed technology-neutral capacity rates are reasonable and should be approved for the Standard Offer.

For negotiated PPAs, DESC shall follow Mr. Burgess's approach of offering a technology-neutral seasonal avoided capacity rate. Specifically, DESC shall use the peak periods identified by Mr. Burgess and a seasonal capacity allocation of 25.23% for winter mornings and 74.77% for summer afternoons; and shall adjust its capacity costs as recommended by Mr. Burgess.[168]

D. Proposed PPA Terms and Conditions

1. DESC Testimony

DESC asks this Commission to approve its proposed Standard Offer (as that term is defined by S.C. Code Ann. § 58-41-10(15)), which includes the Renewable Power Purchase Agreement – Standard Offer for Small Power Producers up to Two Megawatts-AC ("Standard Offer PPA") and a Renewable Power Purchase Agreement – Standard Offer for Small Power Producers Not Eligible for the Standard Offer ("Form PPA") (together with the Standard Offer PPA, "the Proposed

[168] The Commission notes that, as with avoided energy rates, this ruling obviates the need for DESC to make another avoided cost filing for purposes of complying with the November 2018 Settlement Agreement.

Contracts"). DESC Witness Folsom presented and supported the proposed PPAs in his direct testimony.

DESC Witness Kassis responded to the Intervenors' testimony in his rebuttal testimony. In response to testimony of SCSBA, JDA, and ORS, DESC has agreed to make multiple changes to its Standard Offer PPA and its Large QF PPA. The changes that have been agreed to for the Standard Offer PPA are as follows:

1. Relieving QFs from liquidated damages for interconnecting utility delays, both for interconnection facilities and network upgrades.
2. Removing provisions requiring EPC and O&M contracts to be in a form and substance satisfactory to the Buyer.
3. DESC provided a form of surety bond in an exhibit to the contract.
4. Revisions with respect to Seller's indemnification of the Buyer for Environmental Liability, and personal and property damage.
5. Removing provisions enabling the Buyer to terminate the contract in an Extraordinary Event.
6. Extending the maximum duration of Force Majeure to 9 months.
7. Adding current and prospective investors to the list for whom confidential information may be shared.
8. Adding a provision that enables the Seller to terminate the contract in the event of high interconnection costs (e.g., $75,000/MW).

With respect to the other issues addressed by intervenors, DESC declined to make changes to its proposed terms and conditions. For DESC's Standard Offer PPA and Form PPA, these remaining issues include (1) liquidated damages and extension payments; (2) DESC's proposed energy production guarantee requirement; (3) the consideration of energy storage; (4) DESC's proposed termination payment.

With respect to the liquidated damages and extension payments, DESC initially proposed liquidated damages for failure to timely achieve the commercial operation date ("COD") at $55,000/MWh. In rebuttal testimony DESC decreased the proposed liquidated damages to

$41,000/MWh, which Witness Kassis maintained is a reasonable proxy for the damages that DESC would incur if a project fails to meet COD.[169]

With respect to DESC's proposed energy production guarantee requirement, DESC proposed a guaranteed energy production of 85% of the Contract Quantity. DESC proposes that a Shortfall will occur if the facility fails to deliver the Guaranteed Energy Production in any particular Contract Year. If there is a Shortfall, the Seller is subject to Performance Liquidated Damages which must be paid within 30 days of receipt of an invoice. The Buyer can terminate the PPA if the Facility fails to deliver eighty-five percent (85%) of the Guaranteed Energy Production in any two consecutive Contract Years. DESC Witness Kassis testified that the Guaranteed Energy Production provision is meant to address the risk arising from a QF's failure to perform under the contract and that 85% guarantee is appropriate and is sufficiently protective for QFs.[170]

Regarding the consideration of energy storage, Witness Kassis testifies that the November 30, 2018 settlement in Docket No. 2017-370-E only required DESC to file "proposed avoided cost rates for energy and capacity that provide accurate pricing for storage as a separate resource; or proposed technology-neutral avoided cost rates for energy and capacity that provide accurate pricing for dispatchable renewable generating facilities such as solar + storage (e.g., hourly pricing)" by December 31, 2019, and that Act 62 does not supersede the terms of any settlement agreement entered into prior to the adoption of the Act.[171] Mr. Kassis maintains, therefore, that DESC was under no obligation to file rates that considered energy storage in this proceeding.

169 Kassis Rebuttal, p. 18-19.
170 Kassis Rebuttal at 20-21.
171 Kassis Rebuttal, p. 23.

Finally, as to DESC's proposed termination payment, Witness Kassis continues to support the post-COD termination payment as reasonable, including the proposed floor that could increase a termination payment beyond the level of replacement power.[172]

2.SCSBA Direct Testimony

SCSBA Witness Levitas raised many concerns with DESC's proposed Standard Offer PPA and Large QF PPA in his direct testimony. As discussed above, in his rebuttal testimony and during the evidentiary hearing, Mr. Levitas indicated that in the process of reaching consensus with DESC on a number of the contested issues, he withdrew many of his initial criticisms of DESC's proposal.[173] With respect to the remaining issues in controversy, Witness Levitas testified that DESC's proposed liquidated damages and payment provision are commercially unreasonable, are excessively high, and are in excess of any actual damages that DESC would occur.[174] Witness Levitas recommended liquidated damages in the amount of $5,000/MW-AC for first 20 MW, plus $2,000/MW-AC for any capacity above 20 MW.[175] In surrebuttal testimony, Witness Levitas testified that DESC's proposed reduction of the LDs to $41,000/MWh was still excessively high and did not reflect the likely cost to DESC in the event that a QF failed to timely reach COD.[176]

---

[172] Kassis Rebuttal, p. 25 lines 15-19.
[173] Those included: (1) basing the Completion Date on the estimated in-service date per the Interconnection Agreement; (2) basing the Early Termination Fee on estimated losses at 95% of projected output in the event of early termination by the Buyer; (3) that expanding the Nameplate capacity should not require consent of the Buyer; (4) providing clarifications with respect to curtailment of output based on "system conditions"; (5) deleting Section 11.6 with respect to the description of liquidated damages; (6) eliminating the requirement for the Buyers prior written consent for pledging the agreement or associated revenues to Financing party; (7) removing restrictions with respect to public announcements on the construction and operations of the contracted facility; and (8) establishing that in the event that damages are owed by the Seller, the amount of the Notice of Commitment (NOC) to Sell fee of $5,000 should be deducted from the amount of damages owed.
[174] Levitas Direct, p. 10.
[175] *Id.*
[176] Levitas Surrebuttal, p. 4-5.

With respect to DESC's proposed guaranteed energy production requirements, Mr. Levitas testified that DESC's proposal is not commercially reasonable and recommended that DESC adopt Duke's methodology to calculate production based on a two-year average.[177] In surrebuttal testimony Witness Levitas recommended that liquidated damages should be DESC's sole remedy in the event of a Shortfall and that parties may enter into a new PURPA PPA in the event of a termination.[178]

Regarding energy storage, Mr. Levitas testified that DESC did not include any provisions regarding storage in their proposed contracts which would leave any inclusion of language regarding energy storage up to negotiations without Commission oversight.[179] Witness Levitas noted that without proposed language regarding storage, QF developers are unable to make informed decisions regarding the inclusion or addition of storage, and that Duke had included a storage protocol in its avoided cost filings.[180]

With respect to DESC's proposed termination payment, Witness Levitas stated that the provision is not commercially reasonable and should be removed from the PPA.[181] Mr. Levitas notes that the proposed provision could allow DESC to recover damages far in excess of the cost to replace the QF power, resulting in a major windfall to DESC, which is contrary to well-established contract law.[182]

3.JDA Testimony

177 Levitas Direct, p. 14.
178 Levitas Surrebuttal, p. 6.
179 Levitas Direct, p. 15.
180 Hearing Vol. 2, p. 447 lines 7-15.
181 Levitas Direct, p. 18.
182 Hearing Vol. 2, p. 448 lines 3-11.

JDA Witness Chilton testified that the expansion of QFs in South Carolina as envisioned by PURPA and further prioritized by Act 62 rests on the ability of QFs to attract regularly available, market-rate financing from reputable providers, which in turn relies on fair and commercially reasonable PPA contract terms.[183]

4.ORS Testimony

ORS Witness Horii testified that, based on his experience, DESC's proposed Standard Offer PPA and Large QF PPA terms and conditions are non-discriminatory, commercially reasonable, and conform to applicable legal standards.[184] Witness Horii noted his concern that the language in section 6.1(a) regarding "expected range of uncertainty based on historical operating experience" was unclear, and he recommended that DESC clarify that provision.[185] During the evidentiary hearing, Witness Horii acknowledged that he did not personally have experience negotiating QF contracts of the type at issue in this proceeding and that he had relied upon other members of his team at E3 in assessing the reasonableness of the PPA terms and conditions and that those E3 employees were not available for cross-examination at the hearing.[186] Mr. Horii also stated that he was not familiar with the specific requirements of South Carolina law requiring liquidated damages to bear a reasonable relationship to the harm that would actually be suffered in the event of a breach.[187]

5.Power Advisory's Conclusions

Power Advisory reviewed DESC's proposed Standard Offer and Form PPAs, as well as the testimony and evidence presented by Parties in this proceeding. In its November 4, 2019 report,

---

[183] Hearing Vol. 2 at 462.5 (Chilton Direct).
[184] Hearing Vol. 2 at 695.47 (Horii Direct).
[185] *Id.* at 695.47-.48.
[186] Hearing Vol. 2 at 712-715.
[187] *Id.* at 716.

Power Advisory noted the issues that had been resolved between DESC and SCSBA, finding that the resolution of those issues was reasonable, and it addressed the issues that remained in controversy. With respect to the remaining issues in controversy, the Power Advisory report agreed with SCSBA Witness Levitas on the following contested issues relating to the Standard Offer and Form PPAs:

1. That the liquidated damages proposed by DESC are too high and that a more reasonable formula for liquidated damages would be the one agreed upon by Duke and SCSBA.[188]

2. That the proposed Termination Payment does not appear to be consistent with any actual damages or consequences experienced by DESC as a result of contract termination and should be rejected.[189] After reviewing termination payment terms in a number of other jurisdictions, Power Advisory recommended that DESC remove the floor on damages and amend the formula to reflect the cost of replacement energy at the then-current costs of replacement energy under the following formula:

Termination Payment is the NPV of

(RateRE – Net Energy Rate) x (Dterm x Edaily) + C + O

Where:

RateRE is the is price per kWh of replacement energy

(RateRE – Net Energy Rate) shall not be less than zero

Dterm is the number of days remaining on the term

Edaily is the expected daily kWh of Net Energy to be delivered during the remainder of the term, and no less than the Contract quantities

C is all reasonable costs and expenses incurred by Buyer resulting from event of default (e.g., legal fees)

O is all other amounts such as owed by the Seller (e.g., overdue Delay Damages, Extension Payments, etc.).[190]

---

[188] Power Advisory Report at 59-60.
[189] *Id.* at 65.
[190] *Id.* at 66-67.

With respect to DESC's proposed Guaranteed Energy Production requirement, Power Advisory stated that its "research indicates that providing a termination right for a PPA where pricing is based on avoided costs and thereby reflects the buyer's cost of generating or purchasing the power is outside the norm." Power Advisory concluded that "such a provision disproportionately increases project risks relative to the harm that would be realized by customers and believe that the termination if the Facility fails to deliver 85% of the Guaranteed Energy Production in any two consecutive Contract Years right should be eliminated."[191]

With respect to the absence of language regarding the incorporation of energy storage in the Standard Offer or Form PPAs, Power Advisory concluded that it would have been desirable for DESC to outline the provisions for energy storage as part of this proceeding but that, given that Act 62 is not intended to "supersede the conditions of any settlement entered into by an electrical utility and filed with the commission", Power Advisory did not believe that DESC must be required to provide terms and conditions related to energy storage at this time. Power Advisory also stated that in its opinion imposing associated terms and conditions would deprive the parties from the opportunity to negotiate provisions of these terms and conditions.[192]

6. The Commission's Conclusions Regarding Proposed PPA Terms and Conditions

PURPA provides states significant discretion in the establishment of QF contract terms and conditions. Act 62 provides this Commission specific guidance as to the requirements of power purchase agreements approved under the Act, including requiring this Commission to approve power purchase agreements, including terms and conditions that are commercially reasonable and

[191] *Id.* at 62.
[192] *Id.* at 63.

consistent with regulations and order promulgated by FERC implementing PURPA. S.C. Code Ann. § 58-41-20(B)(2).

As described above, the PPA and terms and conditions issues in dispute were primarily addressed by DESC and SCSBA. Although ORS Witness Horii concluded that DESC's proposed PPAs were generally reasonable, the Commission gives little weight to Witness Horii's findings on these issues based on Mr. Horii's acknowledgement that he has little or no experience negotiating or analyzing contracts of this type and that he did not closely scrutinize the PPAs prior to reaching his conclusion.

The Commission first notes that DESC's decision to propose a Standard Offer PPA that is substantially similar to the Form PPA is reasonable. With respect to the issues no longer in controversy between the Companies and SCSBA, the Commission accepts as reasonable the consensus reached on the following issues relating to the Standard Offer and Form PPA:

1. Relieving QFs from liquidated damages for interconnecting utility delays, both for interconnection facilities and network upgrades;
2. Removing provisions requiring EPC and O&M contracts to be in a form and substance satisfactory to the Buyer;
3. DESC provided a form of surety bond in an exhibit to the contract;
4. Revisions with respect to Seller's indemnification of the Buyer for Environmental Liability, and personal and property damage;
5. Removing provisions enabling the Buyer to terminate the contract in an Extraordinary Event;
6. Extending the maximum duration of Force Majeure to 9 months;
7. Adding current and prospective investors to the list for whom confidential information may be shared; and
8. Adding a provision that enables the Seller to terminate the contract in the event of high interconnection costs (e.g., $75,000/MW).

With respect to the remaining Standard Offer and Form PPA issues in controversy, the Commission agrees with the testimony and recommendations of SCSBA Witness Levitas and Power Advisory regarding the application of changes to the Standard Offer PPA, as follows.

Regarding the Liquidated Damages and Extension Payments, the Commission agrees with Witness Levitas and Power Advisory that the liquidated damages of $41,000/MWh proposed by DESC in rebuttal testimony are unreasonably excessive and are significantly larger than the liquidated damages proposed by Duke and substantially higher than those established in other jurisdictions. The Commission notes that liquidated damages are required to bear a reasonable relationship to the harm that would actually be suffered in the event of a breach. DESC's proposal does not meet this standard because the evidence presented demonstrates that the damages that DESC would be permitted to recover under its proposal are likely far in excess of its actual damages, including the fact that DESC could easily calculate damages for expected energy under the PPA, further obviating the need for liquidated damages.

Next, with respect to the Guaranteed Energy Production requirement, the Commission agrees with SCSBA Witness Levitas and Power Advisory that DESC's proposed requirement that the QF maintain an 85% energy production level relative to the estimated energy production, including liquidated damages in the event of a Shortfall and a Buyer's option to terminate the contract for Shortfalls over two years is not commercially reasonable. The Commission agrees that it would be appropriate to use a 70% production level, as adopted by Duke, and that DESC should calculated that shortfall based on a rolling two-year average. The Commission also agrees with Witness Levitas and Power Advisory that allowing DESC to terminate the PPA for a QF's failure to meet the energy production level is not reasonable, and that liquidated damages should be DESC's sole remedy in the event of a default.

Regarding DESC's proposed Termination Payment provision, the Commission agrees with Witness Levitas and Power Advisory that DESC's proposed termination payment methodology is commercially unreasonable and would likely result in an undue windfall to DESC. The

Commission agrees with Mr. Levitas that DESC's proposal would allow the utility to recover damages far in excess of its actual cost to replace the energy, and the Commission finds that it would be appropriate for DESC to adopt the approach used by Duke, such that DESC is made whole for any overpayment to the Seller relative to applicable avoided cost rates.

Finally, the Commission agrees with Witness Levitas that it is appropriate for the Commission to address the issue of appropriate terms and conditions for storage devices in this proceeding. Act 62 clearly directs that utilities develop fair and reasonable solar plus storage tariffs, and in the absence of such provisions approved in this avoided cost proceeding, DESC would essentially be able to unilaterally decide during PPA negotiations – and without any Commission oversight – what a QF must to do be eligible for solar plus storage rates. Therefore, the Commission will require DESC to file within 30 days its proposed solar plus storage tariffs, subject to intervenor comment and Commission approval.

E. <u>Proposed NOC Form and LEO Standard</u>

Act 62 provides that "[a] small power producer shall have the right to sell the output of its facility to the electrical utility at the avoided cost rates and pursuant to the power purchase agreement then in effect by delivering an executed notice of commitment to sell form to the electrical utility." S.C. Code Ann. § 58-41-20(D). Under PURPA, a QF is able to "lock in" fixed avoided cost rates at the time it establishes a LEO. Act 62 requires the Commission to approve, in this docket, a standard notice of commitment ("NoC") Form that a QF may deliver in order to establish a LEO. Act 62 requires a NoC Form "that provides the small power producer a reasonable period of time from its submittal of the form to execute a power purchase agreement." It further provides that "in no event… shall the small power producer, as a condition of preserving the pricing and terms and conditions established by its submittal of an executed commitment to sell form to the electrical utility, be required to execute a power purchase agreement prior to receipt of a final interconnection agreement from the electrical utility." *Id.*

1.DESC Testimony

DESC requested that the Commission approve a NoC Form that incorporates DESC's proposed standard for establishing a LEO. In Direct testimony DESC Witness Folsom proposed a NoC Form that would require a QF to meet the following prerequisites in order to establish a LEO:

(1) Commitment to execute a PPA within 90 days and to deliver power within 365 days of Notice of Commitment Form Submittal Date;

(2) Commitment to deliver full electrical output to the Company for a period of 10 years, or for such lesser period that may be mutually agreed to in a PPA;

(3) Demonstration of control of the Project Site and required land-use approval and environmental permits;

(4) Requirement to have requested Interconnection Service from the Company and (if Interconnection Service has not been established) to have executed a System Impact Study agreement with all required technical information; and

(5) Payment of a non-refundable $5000 fee.

In response to testimony of the Intervenors, DESC has agreed to make certain changes to its proposed NoC Form. The remaining issues that have not been agreed upon by the parties and remain in controversy are the following:

(1) Limiting PPA eligibility following termination;

(2) 365-day in-service deadline;

(3) Eligibility pre-conditions.

In rebuttal testimony DESC Witness Kassis continues to support DESC's proposal that if a QF submits an executed NOC form but fails to execute a PPA in a timely fashion, in addition to termination of the LEO, the QF will not be eligible for fixed-pricing for a period of two years.[193] Mr. Kassis testified that this is to prevent QFs from "gaming" avoided cost rates by terminating a LEO in the event that avoided costs increase.[194] With respect to the 365-day in-service deadline, Witness Kassis maintained that the 365-day in-service deadline is appropriate and that SCSBA Witness Levitas' recommendation to toll the 365-day deadline based on interconnection delays is not reasonable.[195] Finally, regarding LEO formation pre-conditions, DESC's proposed NoC form states the QF is required to have secured all land-use approvals and environmental permits and that the Seller is required to have an executed System Impact Study Agreement. DESC Witness Kassis defends this position in rebuttal testimony as reasonable pre-conditions to ensure commercial viability of the project.[196]

2.SCSBA Testimony

SCSBA Witness Levitas provided testimony concerning FERC's guidance to states concerning LEO standards. Mr. Levitas testifies that in order to form a LEO a QF must make a binding commitment to sell its output to the utility, subject to consequences for failing to do so.[197] Mr. Levitas argues that DESC's proposed NOC includes unreasonable requirements, including requiring the QF to have secured all required permit, requiring the QF to deliver power within 365 days of submitting the NoC Form, prohibiting a QF from establishing a LEO for two years if it terminates the NoC, and requiring QFs to have signed a System Impact Study Agreement.[198] Mr. Levitas testified that SCSBA would withdraw its objection to the 365-day requirement if that time

[193] Kassis Rebuttal at 66.36.
[194] *Id.*
[195] *Id.* at 66.20.
[196] *Id.* at 66.37-38.
[197] Hearing Vol. 2 at 451.27 (Levitas Direct)
[198] *Id.* at 451.27-.29; Hearing Vol. 2 at 453.13 (Levitas Surrebuttal).

was extended to account for additional time required for Excusable Delays per the terms of the Standard Offer and Form PPAs.[199]

3.Power Advisory Conclusions

Power Advisory reviewed the Proposed NoC Form, as well as the testimony and evidence presented by Parties in this proceeding. In its November 4, 2019 report, Power Advisory addressed the remaining issues in controversy. With respect to DESC's proposal that a QF must obtain all required permits and land-use approvals prior to LEO formation, Power Advisory addressed the arguments made by DESC and by SCSBA and concluded that since SCSBA has agreed to the 365 day in-service date requirement (subject to the same Excusable Delays as the in-service deadline under DESC's proposed PPAs), that QFs be allowed to secure permits after formation of a LEO, consistent with the PPAs which do not require permits be obtained before execution.[200]

With respect to DESC's proposal that a QF must be placed in-service within 365 days of executing the NoC Form, Power Advisory addressed the arguments made by DESC and by SCSBA and concluded that a 365 day in-service date is appropriate so long as the COD date is subject to the same Excusable Delays as the in-service deadline under DESC's proposed PPAs.[201] Power Advisory reasoned that it is logical to align PPA terms with LEO requirements, and that the NOC form acknowledge Excusable Delays that would impact the in-service deadline.[202] Power Advisory did not include a finding relating to the requirement that a QF sign a SIS Agreement prior to LEO formation.

[199] Hearing Vol. 2 at 453.13 (Levitas Surrebuttal).
[200] Power Advisory Report at 70.
[201] *Id.* at 68-69.
[202] *Id.*

Finally, regarding DESC's proposed 2-year limitation on LEO formation if a QF terminates its NoC Form, Power Advisory recommended adopting Mr. Levitas' recommendation of implementing damages per the Standard Offer and Form PPA for failure to execute a PPA in a timely fashion.[203]

4. The Commission's Conclusions Regarding the Proposed NoC Form and LEO Standard

FERC's regulations implementing PURPA establish the requirement that a QF have the option to choose to enter into a long-term fixed contracts with avoided costs set at the time the LEO is established.[204] FERC has stated that the "[u]se of the term 'legally enforceable obligation' is intended to prevent a utility from circumventing the requirement that provides capacity credit for an eligible qualifying facility merely by refusing to enter into a contract with the qualifying facility."[205] Similarly, and consistent with PURPA, Act 62 requires this Commission to approve a standard NoC Form to be used establish a LEO and provides that "in no event…shall the small power producer, as a condition of preserving the pricing and terms and conditions established by its submitted of an executed commitment to sell form to the electrical utility, be required to execute a power purchase agreement prior to receipt of a final interconnection agreement from the electrical utility." S.C. Code Ann. § 58-41-20(D).

---

203 *Id.* at 68.
204 18 C.F.R. § 292.304(d)(2).
205 *FLS Energy Inc.*, 157 FERC ¶ 61, 211 (2016)(citing *Final Rule Regarding the Implementation of Section 210 of the Public Utility Regulatory Policies Act of 1978*, Order No. 69, FERC Stats. & Regs. ¶ 30,128 at 30,880 *order on reh'g*, Order No. 69-A, FERC Stats. & Regs. ¶ 30,160 (1980), *aff'd in part & vacated in part sub nom. Am. Elec. Power Serv. Corp. v. FERC*, 675 F.2d 1226 (D.C. Cir. 1982), *rev'd in part sub nom. Am. Paper Inst. v. Am. Elec. Power Serv. Corp.*, 461 U.S. 402 (1983).

After reviewing the testimony and evidence presented by Parties to this proceeding, the Commission first concludes that the agreed-upon changes to the NoC Form are reasonable and should be adopted.

With respect to DESC's proposed requirement that a QF must secure all required permits and land-use approvals prior to establishing a LEO, the Commission agrees with SCSBA Witness Levitas and Power Advisory that this requirement is unnecessarily burdensome for QFs and that it is unreasonable to expect a QF to incur the expense to secure permits and land-use approvals until it has secured a price for its output.

Next, with respect to DESC's proposal that a QF be required to be placed in-service within 365 days of LEO formation, the Commission agrees with the arguments and reasoning of SCSBA Witness Levitas and of Power Advisory that it is reasonable and appropriate to require the QF to commence delivery within 365 days of its Notice of Commitment to Sell, provided that such obligation is subject to the same Excusable Delays as the in-service deadline under DESC's proposed PPAs.

Regarding DESC's proposal limiting a QF's eligibility to secure a LEO for two years following a termination, the Commission concludes that Witness Levitas' proposal to impose damages on the QF per the Standard Offer and Form PPA for failure to execute a PPA in a timely fashion is a reasonable and appropriate means of addressing this issue. The Commission adopts Mr. Levitas' proposal of damages equaling $5,000/MW-AC for first 20 MW, plus $2,000/MW-AC for any capacity above 20 MW.

Finally, the Commission agrees with Witness Levitas that the NoC Form should be clarified to include the provision that a QF need not have executed a System Impact Study Agreement unless one has been tendered to it by DESC.

F. <u>Proposals for PPAs with a Duration Longer than Ten Years</u>

Act 62 expressly permits the Commission to "approve commercially reasonable fixed price power purchase agreements with a duration longer than ten years" as proposed by the intervenors.[206] PPAs in excess of ten years "must contain additional terms, conditions, and/or rate structures as proposed by intervening parties and approved by the commission, including, but not limited to, a reduction in the contract price relative to the ten year avoided cost."[207] Act 62 expressly directs the commission "to consider the potential benefits of terms with a longer duration to promote the state's policy of encouraging renewable energy" when approving intervenors proposals for PPAs with a tenor in excess of ten years.[208]

1. DESC Testimony

In this proceeding DESC was very limited in their testimony in opposition to tenor of contract lengths longer than 10 years. DESC put forth that they merely calculate avoided cost numbers over a period of "10 years so most…long term uncertainty (as to avoided cost values rising or falling" is not relevant."[209] Company Witness Kassis, in filed testimony, put forth the concept that he believes that FERC encourages longer term contracts "through more rate flexibility" possibly by a reset after a term of years.[210] Finally, in response to Commissioner Williams question regarding what additional terms required by Act 62 to warrant a term longer than 10 years for a fixed price PPA, DESC Witness Raftery proposes that "dispatchability for the

[206] S.C. Code Ann. § 58-41-20(F)(1).
[207] *Id.*
[208] S.C. Code Ann. § 58-41-20(F)(2).
[209] Neely Rebuttal at 16.
[210] Kassis Rebuttal at 15.

solar" would satisfy the requirements for Commission approval of PPA terms over 10 years under Act 62.[211]

2. SBA Testimony

SBA Witness Levitas put forth testimony that explained the principle that the "the lower the price (avoided cost) the longer the term required to support financing" which FERC requires of PURPA PPAs.[212] SBA Witness Davis put forth testimony that longer term solar PPA's is a risk-hedge to customers and protective of the ratepayers.[213] Finally, SBA Witness Downey testified, from the perspective of a business owner, that all of the risk in developing a project is borne by the developer and that obtaining financing in a traditional lending market is a challenge.[214] Witness Downey emphasized that proper implementation of Act 62 through contracts longer than 10 years allow businesses like his to compete while also passing along benefits to the customers.[215]

3. JDA Testimony

JDA Witness Chilton drew on her 21 years in structured finance, to speak to the commercial reasonableness of certain terms of PPAs between the utility and qualifying small power production facilities (or QFs) as defined in PURPA and Act 62. She noted that PURPA, FERC regulations, and Act 62 all direct the Commission to strike a balance between two important concerns: first, that the rates that South Carolina ratepayers ultimately pay for QF generation must be just and reasonable and, second, that small power producers must receive fair treatment and have the ability to obtain PPAs with terms that do not discriminate against them in South Carolina's electricity

[211] Hearing Vol. 1, Pg. 123.
[212] Levitas Direct at 9.
[213] Davis Surrebuttal at 6.
[214] Downey Direct at 9.
[215] Downey Direct at 11.

generation landscape.[216] In regard to the issue of PPA duration specifically, JDA Witness Chilton highlighted that DESC's proposal post-Act 62 was in direct contradiction to the practice of **other parts of the Dominion corporate family where solar PPAs from 15 to 25 or even 30 years are common**, that it would dramatically reduce the ability of QFs to access mainstream capital, would deprive South Carolina ratepayers of the protections against fuel price variation and uncertain future capital costs of generation that long-term PPAs bring, and would be inconsistent with Act 62's specific mandate to use such terms as PPA length to promote renewable energy in South Carolina.[217]

Witness Chilton articulated that a longer PPA contract term, accompanied by an appropriately calculated avoided cost-based purchase price, will result in a greater proportion of QFs accessing mainstream capital than would be the case under the utility's unnecessarily restrictive proposals.[218] Finally, JDA Witness Chilton concluded her testimony by **proposing on behalf of the intervenors** that the Commission set the tenor of PPA contracts at a minimum of fifteen (15) years with appropriate conditions as set forth in SC Code Ann. § 58-41-20(F)(1) to facilitate the opportunity of QFs to obtain financing in South Carolina.[219] Further, to meet the high standard set by the legislature not just to accept renewable energy in the state but to affirmatively promote it, Witness Chilton proposed that this Commission direct that the terms of DESC's PPAs be set between fifteen (15) and twenty (20) years, and that some PPAs be approved for longer than twenty (20) years, all with the aforementioned statutory conditions.[220]

[216] Hearing Vol. 2 at 458.
[217] *Id.*
[218] Hearing Vol. 2 at 459.
[219] *Id.*
[220] Hearing Vol. 2 at 460.

JDA Witness Chilton provided expert testimony on the commercial reasonableness of certain terms of PPAs between the utility and qualifying small power production facilities as defined in PURPA and Act 62 and what tenor of contract is needed in South Carolina to effectuate Act 62. Ms. Chilton also addressed contentions made in DESC Witnesses' testimony as to the relative weight that PURPA and Act 62 give to their respective legislative goals to encourage renewable energy and how the balancing of those goals might affect terms provided by the utility in PPAs for small power producer QFs.[221]

4. ORS Testimony

The ORS is statutorily charged with representing the public interest in all commission proceedings.[222] ORS sponsored testimony by Robert Horii and Robert Lawyer that provided some guidance as to the requirements of Act 62 and PURPA. Given their role to advocate for the public interest, the ORS did not offer any testimony which opposed the approval of PPAs longer than ten years.

5. The Commission's Conclusions Regarding Proposals for PPAs with a Duration Longer than Ten Years

This Commission approves Intervenors JDA's and SCSBA's proposals for PPAs longer than ten years, including terms up to twenty years. These proposals are consistent with the intent of the legislature in passing Act 62 and in compliance with South Carolina's express policy of encouraging renewable energy, as described below. Act 62 contains the following directive:

> Electrical utilities, subject to approval of the commission, shall offer to enter into fixed price power purchase agreements with small power producers for the purchase of energy and capacity at avoided cost, with commercially reasonable terms and a duration of ten years. **The commission may also approve commercially reasonable fixed price power purchase agreements with a duration longer than ten years, which must contain additional terms, conditions, and/or rate structures as proposed by intervening parties and**

[221] *Id.*
[222] S.C. Ann. § 58-4-50(4).

> **approved by the commission, including, but not limited to, a reduction in the contract price relative to the ten year avoided cost.** …

S.C. Code Ann. § 58-41-20(F)(1).

> Once an electrical utility has executed interconnection agreements and power purchase agreements with qualifying small power production facilities located in South Carolina with an aggregate nameplate capacity equal to twenty percent of the previous five-year average of the electrical utility's South Carolina retail peak load, that electrical utility shall offer to enter into fixed price power purchase agreements with small power producers for the purchase of energy and capacity at avoided cost, **with the terms, conditions, rates, and terms of length for contracts as determined by the commission in a separate docket or in a proceeding conducted pursuant to Section 58-41-20(A). The commission is expressly directed to consider the potential benefits of terms with a longer duration to promote the state's policy of encouraging renewable energy.**

S.C. Code Ann. § 58-41-20(F)(2).

The legislature has clearly indicated through Act 62 that the ten-year contracts that utilities must offer to QFs under Act 62 do not impose undue risk on ratepayers. Act 62 also expressly permits the Commission to approve contracts longer than ten years. Prior to a utility executing interconnection agreements and PPAs with an aggregate nameplate capacity equal to twenty percent of its five-year average retail peak load, Act 62 requires that rates beyond a 10-year term include a reduction in the contract price relative to the ten year avoided cost. Once that twenty percent threshold has been reached, the contract price reduction is no longer required and the Commission is authorized to determine the appropriate contract terms, rates, and conditions that then apply, particularly in regard to longer term contracts that advance the state's policy of encouraging renewable energy. The Commission finds that it is appropriate to approve contracts longer than ten years and that such longer-term contracts do not impose undue risk on ratepayers. The Commission is not persuaded by testimony from the Companies that contracts longer than ten years pose substantial risk to ratepayers. Rather, longer-term contracts pursuant to the requirements of Act 62 would appropriately balance the interests of ratepayer risk and the encouragement of independent small power producers in South Carolina.

Offering contracts longer than ten years is consistent with PURPA and FERC's implementing regulations and orders. PURPA has been interpreted by FERC as requiring that PPAs be of sufficient length to give the QFs "reasonable opportunities to attract capital." *Windham Solar LLC & Allco Fin. Ltd.*, 157 FERC ¶ 61,134 at ¶ 8 (2016). Neither PURPA nor FERC expressly state how long a contract must be in order to provide QFs a reasonable opportunity to attract capital, and the Commission finds the testimony provided by JDA Witness Chilton instructive in reaching a decision on this issue. JDA Witness Chilton testifies that "[r]easonable opportunities to attract capital" means that a QF must be able to obtain regularly-available, market-rate financing for the costs of developing, building, and operating their projects. This requires the Commission to consider types, terms, and providers of financing for QFs that are wholly different from the preferential financing that the utility enjoys by virtue of its monopoly status, history, and ability to rate-base the entirety of the cost of its generation facilities.[223] Witness Chilton testifies that in her expert opinion PPAs with tenors of at least fifteen years and up to twenty years would facilitate the opportunity to obtain financing for a majority of QFs in South Carolina.[224] The Commission was statutorily required to retain an independent third-party expert to give its independently derived opinion based on its experience as to a host of issues surrounding these proceedings.[225] The Commission's Third-Party Expert, Power Advisory, LLC ("Power Advisory") offered its opinion as expressly permitted by Act 62 that, in comparing the 30 year contracts in Georgia and 20 year contracts in North Carolina, that fixed price PPAs for 10 years in excess of

[223] Chilton Direct at 4-5.
[224] Hearing Vol. 2, Pg. 467.
[225] S.C. Code Ann. § 58-41-20(I).

$40 per MWh are necessary as the minimum price to "secure financing" in this proceeding under PURPA.[226] The Commission finds the testimony of Witness Chilton persuasive.

PURPA also requires that ratepayers be protected under PURPA contracts. As discussed all witnesses offering testimony on the matter including the ORS witnesses, SCSBA Witnesses, and JDA Witness Chilton all opined that ratepayers will actually benefit from PPAs longer than 10 years. By locking in low rates now, while gas is at a historic low, the ratepayer will not only be protected but will very likely see a net savings over the life of the contract. Further, QF projects pose no risks of cost overruns or abandonments that are passed on to ratepayers. It is also worth noting that ratepayer-intervenors Wal-Mart and SCEUC were both represented in these hearings and did not put forth any testimony or evidence opposing terms of PPAs greater than ten years. Further, even DESC Witness Raftery concluded that the proposal for dispatch rights for uncompensated curtailment to be an acceptable decrement to the Company and ratepayer for a contract longer than 10 years.[227]

Based on the evidence presented by the Parties, the Commission concludes that it is appropriate for DESC to offer contracts that are longer than ten years, and that there are at least two constructs for contracts longer than ten years that would be consistent with Act 62 by further promoting the development of solar QFs, without imposing undue risks on ratepayers. The proposals offered by intervenors SCSBA and JDA are appropriate and comply with the requirements of Act 62, and the Commission adopts them, as described below.

The General Assembly enacted a floor as to contract length for fixed price PPAs at ten years. The legislature left it to the Commission to decide what conditions should apply, **as**

[226] Docket No. 2019-184-E, "Independent Third Party Report Pursuant to South Carolina Act 62" at Pg. 51.
[227] Hearing Vol. 1, Pg. 123.

proposed by intervening parties, for terms of fixed price PPAs in excess of ten years. The intent of Act 62 is clear that renewable energy should be promoted by an accurately calculated avoided cost and a term of contract of a length sufficient to enable development. Power Advisory also acknowledged in its report that a number of intervenors argued that "contract lengths longer than 10-years were essential if QFs were to secure regularly-available market-rate financing."[228] The Commission therefore adopts, as appropriately proposed by intervenors, the following two constructs for contracts longer than ten years.

First, the Commission finds that it would be reasonable to require DESC to offer to enter into longer "dispatchable" PPAs as discussed by DESC Witness Raftery. Such PPAs would include the following attributes:

> (1) the utility would have the right to dispatch the output of the solar facility, without compensation, up to five percent of the facility's projected annual output; any dispatch in excess of those amounts would have to be compensated at full avoided cost rates.
>
> (2) the term of the contract would be a minimum of ten (10) years and a maximum of twenty (20) years, at the QF's election;
>
> (3) as required by Act 62, the rates for the purchase of energy and capacity under the contract would be fixed at the ten-year avoided cost rate for Large QFs (as calculated in accordance with this Order) until DESC has executed interconnection agreements and power purchase agreements with qualifying small power production facilities with an aggregate nameplate capacity equal to twenty percent of the previous five-year average of the DESC's retail peak load. The expected decrease in project revenues based on the utility's uncompensated curtailment rights satisfies Act 62's requirement that contracts longer than ten years include "a reduction in the contract price relative to the ten year avoided cost." S.C. Code Ann. § 58-41-20(F)(1).
>
> (4) as provided for by Act 62, the rates for the purchase of energy and capacity under such contracts would be fixed at the twenty-year avoided cost rate for Large QFs (as calculated in accordance with this Order) once DESC has executed interconnection agreements and power purchase agreements with qualifying small power production facilities with an aggregate nameplate capacity equal to twenty percent of the previous five-year average of the DESC's retail peak load. S.C. Code Ann. § 58-41-20(F)(2).

[228] Docket No. 2019-184-E, "Independent Third Party Report Pursuant to South Carolina Act 62" at Pg. 51.

Second, the Commission finds that it would be reasonable to require DESC to offer to enter into PPAs with a term longer than ten years that provide for a "reset" of avoided cost rates under the PPA after ten years. Specifically, such contracts would be for an initial term of ten years, at ten-year avoided cost rates, as calculated in accordance with this Order. At the conclusion of that ten-year period, the QF would have the right to extend the contract for an additional term of up to ten years, at the QF's election. Rates during the second term of the contract would be adjusted to match the then-current avoided cost rates corresponding to the duration of the second term of the contract (e.g. a QF that elected to extend its contract for seven years would be paid at the seven-year avoided cost rate, using whatever inputs and methodologies were approved by the Commission at that time). This rate "reset" at ten years advances the general assembly's goal of promoting QF generation, while protecting ratepayers from any risk associated with longer-term contracts. Importantly, because such contracts would not have rates fixed for a period of longer than ten years, Act 62's requirement of a reduction in contract price relative to the ten-year avoided cost rate does not apply. Otherwise the terms and conditions of such contracts would be identical to those approved for the Large QF PPA in this docket (except to the extent those provisions directly conflict with the dispatchability and curtailment provisions of the PPA).

VI. FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. DESC's Motion to Strike Final Report of Power Advisory, LLC was not timely filed and has no legitimate legal basis; and granting the motion would seriously undermine the statutory goals of Act 62. The Commission will not grant the motion.

2. Act 62's requirement that in deciding issues related to avoided cost, the Commission "shall strive to reduce the risk placed on the using and consuming public," requires the Commission to consider all risks reasonably attributable to, or avoidable by, long-term fixed-

rate contracts with small power producers. S.C. Code Ann. § 58-41-20(A). Although such contracts create a modest risk of "overpayment" in the event that actual avoided costs are ultimately lower than contracted rates, they also insulate ratepayers from the corresponding risk that avoided cost rates are higher than expected. In addition, procuring energy and capacity via fixed-rate contracts insulates ratepayers from many of the risks associated with utility-developed generation. Under current circumstances, including the historically low cost of natural gas that significantly influences avoided energy rates, ten-year fixed-rate contracts under PURPA result in a net reduction of risk to ratepayers. Contracts for terms of longer than ten years can also result in a net decrease in ratepayer risk as compared to a business-as-usual approach to development of utility-owned generation.

3. The Notice of Proposed Rulemaking ("NOPR") issued by the Federal Energy Regulatory Commission in September 2019, and discussed at length by DESC Witness Kassis, is only a proposed rule, has no legal or evidentiary significance, and has no bearing on the Commission's decision in this matter. Act 62 requires the Commission to comply with "PURPA and the Federal Energy Regulatory Commission's implementing regulations and orders." S.C. Code Ann. § 58-41-20(A). It does not require consideration of proposed rules.

Integration charges

4. It is in the interest of ratepayers to accurately calculate the costs, if any, that are required to integrate QF resources such as solar on DESC's system. However, the integration of significant solar resources onto DESC's systems raises complex technical questions that require careful consideration. Act 62 authorizes the Commission to initiate "an independent study to evaluate the integration of renewable energy and emerging energy technologies into the electric grid for the public interest." S.C. Code Ann. § 58-37-60. One purpose of that study will be to

“evaluate what is required for electrical utilities to integrate increased levels of renewable energy and emerging energy technologies while maintaining economic, reliable, and safe operation of the electricity grid in a manner consistent with the public interest.” It is expected that this study will generate useful data and information that will be highly relevant to establishing a reasonable integration charge, if one is appropriate.

5. DESC has not demonstrated that the Navigant Study used to establish DESC’s proposed Variable Integration Charge (“VIC”) reasonably or appropriately calculated an integration charge that should apply retrospectively to solar QFs that have the “VIC Clause” in their PPAs. The application of a retrospective VIC to contracts that were entered into years ago, when DESC (then, SCE&G) enjoyed substantial bargaining power over the QFs as a monopsony buyer would not represent good public policy and would be contrary to the policy goals of Act 62. If the Commission were to determine that it was appropriate to apply a retrospective VIC onto the approximately 700 MW of solar facilities, the Commission finds that the $0.96/MWh integration charge proposed by SBA Witness Burgess would constitute a reasonable estimation of the costs of integration of the solar QFs on DESC’s system. It would be appropriate for any such charge to be fixed for the duration of the PPA.

6. DESC has not demonstrated that the proposed integration charge embedded into DESC’s avoided energy rate (“EIC”) was reasonably or appropriately calculated, or fairly and accurately reflects the actual integration costs of solar QFs on DESC’s system. It is the Commission’s view that completion of the integration study called for by Act 62 is a necessary precondition for developing a fair calculation of the costs of solar integration; and moreover that any methodology for calculating solar integration charges should be subject to stakeholder input and independent review. However, based on the evidence in the record and the requirement of

Act 62, and solely for purposes of establishing avoided cost rates, terms, and conditions in this proceeding, the Commission finds that the $0.96/MWh integration charge proposed by SBA Witness Burgess would constitute a reasonable estimation of the costs of integration of the solar QFs on DESC's system. The Commission therefore determines that it is appropriate to establish a $0.96/MWh EIC for QFs which establish LEOs or enter into PPAs with DESC between the date of this Order and the approval of DESC's updated avoided cost rates and contracts in the subsequent avoided cost proceeding. The EIC will be applied as an adjustment to the avoided energy rate of a solar QF, subject to the limitations discussed herein. The EIC will not be applied retroactively to any project.

7. DESC may not impose the VIC or EIC on a solar QF that is able to mitigate integration costs by demonstrating that its facility is capable of operating, and contractually agrees to operate, in a manner that materially reduces or eliminates the need for additional ancillary service requirements incurred by the utility, including but not limited to QFs equipped with battery storage. DESC must file with the Commission within 60 days, for review, comment and approval, proposed guidelines for QFs to become mitigate any integration charge.

Avoided cost rates, calculations, and methodologies

8. DESC's avoided cost filings are not "reasonably transparent so that underlying assumptions, data, and results can be independently reviewed and verified by the parties and the commission," as required by S.C. Code Ann. §58-41-20(J). To assist DESC in complying with this requirement on future filings, the commission will order that: (1) prior to the opening of the next proceeding to consider DESC's avoided costs rates, calculations, and methodologies conducted under S.C. Code Ann. § 58-41-20, the Commission will solicit proposals from all interested parties on recommendations related to improved transparency, consistent with the

requirements of Act 62; and (2) in DESC's next biennial avoided cost proceeding, the Commission will again retain, as authorized by S.C. Code Ann. § 58-40-21(I), an independent third-party consultant to evaluate the Company's avoided cost rates, methodologies, terms, calculations, and conditions.

9. Avoided cost calculations are necessarily uncertain, though reasonable inputs must be used. This uncertainty creates a "zone of reasonableness" whereby competing alternatives for particular inputs could each be deemed reasonable. Act 62's stated intent to encourage the development of renewable energy should influence the final decision from this Commission as to what inputs will be required for the calculation of avoided cost.

10. It is generally appropriate for DESC to apply the DRR Methodology to calculated avoided energy and avoided capacity costs in this proceeding.

11. The Commission finds that DESC's proposed avoided energy and capacity rates, calculations, and methodologies (1) do not fully and accurately reflect DESC's avoided costs; (2) are not just and reasonable to the electric consumer of the electric utility and in the public interest; (3) discriminate against qualifying cogeneration and small power production facilities. Consequently, the proposed rates, calculations, and methodologies do not meet the requirements of PURPA and Act 62.

12. The Commission is persuaded that in this case it is preferable to approve technology-neutral avoided energy and capacity rates. Technology neutral rates reduce the possibility of bias for or against solar or any particular type of generation. They also send more accurate price signals to producers and provide flexibility to account for variability among project capabilities and output profiles. This is especially important when accounting for energy storage

technologies that can allow solar facilities to adjust their output profiles and put more power on the grid when it is most needed.

13. DESC's avoided energy calculations for solar QFs are unreliable and do not fully and accurately represent the avoided energy cost of solar QFs. The counterintuitive and inconsistent modeling results and counterintuitive pricing suggest problems with the company's calculations, which cannot be explained given the limited data and information provided by the company. SBA Witness Burgess's proposed avoided energy rates, which are technology neutral, provide a reasonable alternative and will be approved for the Standard Offer.

14. Unfortunately DESC's proposed methodology for calculating solar avoided cost as to be unapprovable for use in developing negotiated PPA rates, even with modifications. As an interim approach until the next biennial proceeding, the Commission will instead require that DESC calculate negotiated rates for solar QFs larger than 2 MW using the same methodology proposed for calculating avoided energy costs for non-solar QFs, with the proviso that rates will be levelized over the entire ten-year term.

15. DESC is incorrect to assign a zero capacity value to solar. DESC's approach to this issue, as described by ORS Witness Horii, is simplistic and does not represent current industry standards.

16. The Commission concludes that a technology-neutral approach to avoided capacity rates is preferable to a technology-specific approach. SBA's proposed technology-neutral capacity rates are reasonable and should be approved for the Standard Offer.

17. For negotiated PPAs, DESC shall follow SBA Witness Burgess's approach of offering a technology-neutral seasonal avoided capacity rate. Specifically, DESC shall use the peak periods identified by Mr. Burgess and a seasonal capacity allocation of 25.23% for winter

mornings and 74.77% for summer afternoons; and shall adjust its capacity costs as recommended by Mr. Burgess.

Contract terms and conditions

18. As proposed, the Company's Renewable Power Purchase Agreement – Standard Offer for Small Power Producers up to Two Megawatts-AC ("Standard Offer PPA") and a Renewable Power Purchase Agreement – Standard Offer for Small Power Producers Not Eligible for the Standard Offer ("Form PPA") (together with the Standard Offer PPA, "the Proposed Contracts") are not commercially reasonable and are not consistent with regulations and orders promulgated by the Federal Energy Regulatory Commission implementing PURPA. However, with modifications of certain terms and conditions as described herein, the Standard Offer PPA and Form PPA are commercially reasonable and consistent with PURPA and Act 62. DESC shall be required to make a compliance filing of revised PPA and Terms and Conditions consistent with this Order within 30 days.

19. With respect to the proposed NoC form, the Commission appreciates the parties' willingness to compromise and reduce the number of issues in dispute. With respect to the remaining areas of disagreement, the Commission generally finds the testimony of SBA Witness Levitas persuasive, and agrees with Power Advisory that, as proposed, the Company's NoC Form is not commercially reasonable and is not consistent with regulations and orders promulgated by the FERC implementing PURPA or with Act 62's requirements. However, with modifications of certain terms and conditions as recommended by Mr. Levitas, the NoC Form is commercially reasonable and consistent with PURPA and Act 62. DESC shall be required to make a compliance filing of a revised NoC Form consistent with this Order within 30 days.

20. The standard offer, avoided cost methodologies, form contract power purchase agreements, commitment to sell form, and other terms or conditions necessary to implement S.C. Code Ann. § 58-41-20 approved in this docket for DESC shall take effect in the first billing cycle after the issuance of this Order.

IT IS THEREFORE ORDERED THAT:

1. Based upon the Joint Application, the testimony, and exhibits received into evidence at the hearing and the entire record of these proceedings, the Commission hereby adopts each and every finding of fact enumerated herein. The Commission's conclusions of law are fully stated above.

2. DESC's Motion to Strike Final Report of Power Advisory, LLC is denied.

3. Any motions not expressly ruled upon herein are denied.

4. The following rates, available to all QFs over 100 kW capacity, are approved for DESC's Standard Offer:

Avoided energy (all QFs)	For all QF resources in all 10 years: Peak Season Peak: $31.05/MWh Peak Season Off-Peak: $27.51/MWh Off-Peak Season Peak: $32.52/MWh Off-Peak Season Off-Peak: $28.93/MWh
Avoided capacity	For all QF resources: Summer: $78.23/MWh (June-Sept, 2-7pm) Winter: $64.59/MWh (Dec-Feb, 6-9am)

The terms "Peak," "Off-peak," "Peak season," and "Off-peak season" shall be subject to the definitions proposed by DESC.

5. For solar QFs with a capacity larger than 2 MW, DESC shall calculate avoided energy cost rates using the same methodology that it uses for non-solar QFs, including but not limited to calculating the "change case" derived from the base case by subtracting a 100 MW round-the-clock power purchase profile; provided, however, that for solar QFs DESC may adjust avoided energy rates to account for the EIC, as otherwise provided in this Order. Rates shall be levelized over the entire term of the contract, as discussed herein.

21. For solar QFs with a capacity larger than 2 MW, DESC shall calculate avoided capacity costs using the technology-neutral methodology proposed by SBA Witness Burgess, as further discussed above. Specifically, DESC shall use the peak periods identified by Mr. Burgess and a seasonal capacity allocation of 25.23% for winter mornings and 74.77% for summer afternoons; and shall adjust its capacity costs as recommended by Mr. Burgess.

22. DESC shall not be permitted to charge any QF that is currently party to a PPA with DESC (or SCE&G), under previously-approved avoided cost rates, a Variable Integration Charge (VIC).

23. The Commission approves an Embedded Integration Charge ("EIC") of $0.96/MWh for solar QFs that contract with DESC under the avoided cost rates, terms, and conditions approved in this docket. The EIC shall be a decrement to the avoided energy rate for solar QFs that do not meet reasonable technical criteria established by DESC for exemption from the EIC. The EIC shall be applied on a prospective basis only, and shall not be applied to any project already under contract with DESC or its predecessor SCE&G.

24. Within 30 days of the date of this Order, DESC shall file with the Commission, for review, comment, and approval, proposed technical guidelines for QFs to avoid imposition of an integration charge. DESC shall not impose any integration charge on a QF until the Commission

approves the proposed technical guidelines, and shall not impose an integration charge for any energy sold to DESC prior to such approval.

25. If DESC initiates a study to determine the costs of integrating solar resources on its system, DESC shall submit that study methodology and inputs to an independent technical review and include the results of that review and any revisions in its initial filing in the next avoided cost proceeding.

26. Within 30 days of the date of this Order, the Commission will open a docket pursuant to S.C. Code Ann. § 58-37-60 in which to initiate an independent study to evaluate the integration of renewable energy and emerging energy technologies into the electric grid for the public interest. Any study of integration costs commissioned by DESC shall, to the maximum extent practicable, take account of and be coordinated with the independent study referenced in this Order.

27. DESC shall, within 15 days of the date of this Order, file for Commission approval revised versions, consistent with the requirements of this Order, of the following:

a. NEM Rider;

b. Rate PR – Avoided Costs Methodology;

c. Rate PR – Standard Offer, Renewable Power Purchase Agreement – Standard Offer For Small Power Producers Up To Two Megawatts-AC;

d. Rate PR – Form PPA;

e. Renewable Power Purchase Agreement – Form For Small Power Producers Not Eligible For The Standard Offer; and

f. Notice of Commitment to Sell Form.

28. The Standard Offer tariffs shall become effective in the next billing cycle after the date of this Order.

29. DESC shall, within 60 days of the date of this Order, file for comment and approval standard form PPAs with terms longer than ten (10) years, in accordance with this Order. The parties are encouraged to meet and confer concerning the precise terms of these PPAs prior to any filing.

BY ORDER OF THE COMMISSION.

Respectfully submitted this 12th day of November, 2019.

NELSON MULLINS RILEY & SCARBOROUGH LLP

By: /s/Weston Adams, III
Weston Adams, III
SC Bar No. 64291
E-Mail: Weston.adams@nelsonmullins.com
1320 Main Street, 17th Floor
Post Office Box 11070 (29211-1070)
Columbia, SC 29201
(803) 255-9708
Attorney for South Carolina Solar
Business Alliance, Inc. and
Johnson Development Associates, Inc.

NELSON MULLINS RILEY & SCARBOROUGH LLP

By: s/James H. Goldin
James H. Goldin
SC Bar No. 100092
E-Mail: jamey.goldin@nelsonmullins.com
1320 Main Street / 17th Floor
Post Office Box 11070 (29211-1070)
Columbia, SC 29201
(803) 799-2000
Attorney for Johnson Development Associates, Inc.

KILPATRICK TOWNSEND & STOCKTON LLP

By: s/Benjamin L. Snowden
Benjamin L. Snowden
NC Bar No. 51745
E-mail: bsnowden@kilpatricktownsend.com
4208 Six Forks Rd., Suite 1400
Raleigh, NC 27609
(919) 420-1719
Attorney for South Carolina Solar Business Alliance
Admitted pro hac vice